SOIL SURVEY OF

Miller and Seminole Counties, Georgia

United States Department of Agriculture
Soil Conservation Service
In cooperation with
University of Georgia, College of Agriculture
Agricultural Experiment Stations

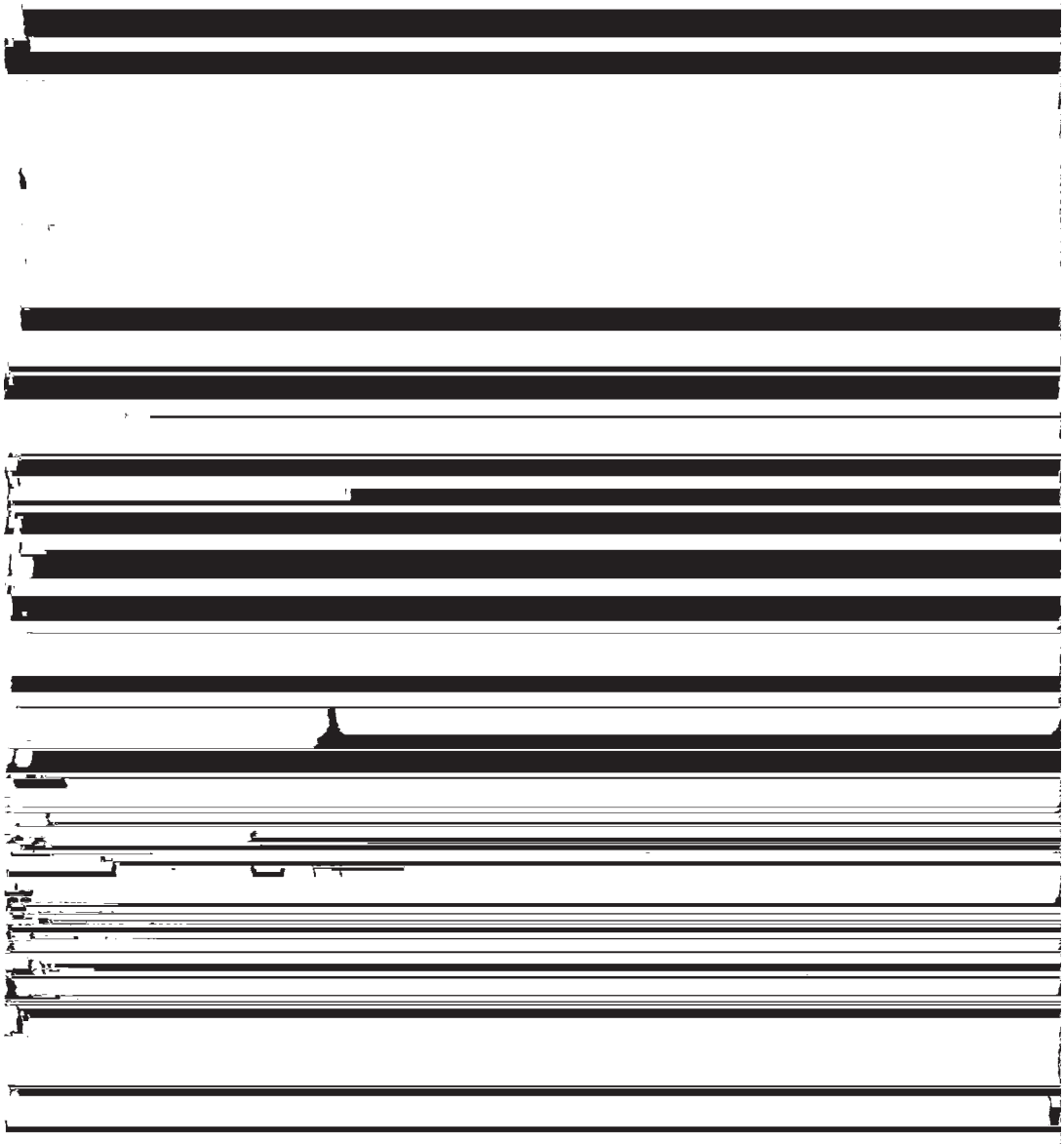
This is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and agencies of the States, usually the Agricultural Experiment Stations. In some surveys, other Federal and local agencies also contribute. The Soil Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in the period 1966-70. Soil names and descriptions were approved in 1971. Unless otherwise indicated, statements in the publication refer to conditions in the counties in 1971. This survey was made cooperatively by the Soil Conservation Service and the University of Georgia, College of Agriculture, Agricultural Experiment Stations. It is part of the technical assistance furnished to the Flint River Soil and Water Conservation District.

Soil maps in this survey may be copied without permission, but any enlargement of these maps could cause misunderstanding of the detail of mapping and result in erroneous interpretations. Enlarged maps do not show small areas of contrasting soils that could have been shown at a larger mapping scale.

HOW TO USE THIS SOIL SURVEY

THIS SOIL SURVEY contains information that can be applied in managing [redacted] show soils that have the same limitation or suitability. For example, soils that have a [redacted]



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BY ROYCE G. MIDDLETON AND ERNEST H. SMITH, SOIL CONSERVATION SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE UNI-

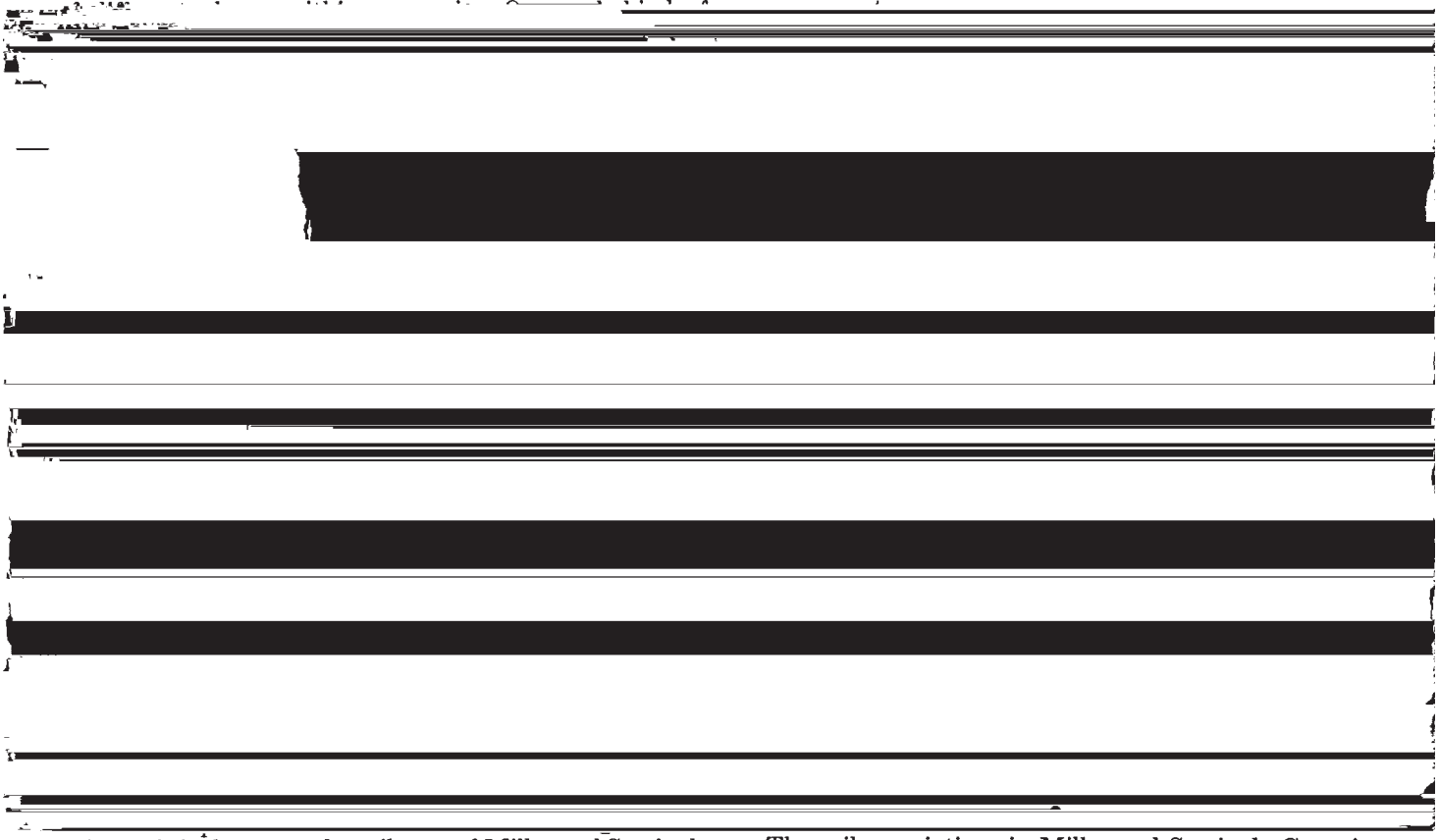
[redacted]

MILLER AND SEMINOLE COUNTIES are in the [redacted] of crops. The climate is favorable. Summers generally are [redacted]

details that help in drawing boundaries accurately. The soil map at the back of this publication was prepared from aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a recognized soil phase.

Some mapping units are made up of soils of different series,



mapping unit is shown on the soil map of Miller and Seminole Counties: the undifferentiated group.

An undifferentiated group is made up of two or more soils that could be delineated individually but are shown as one unit because, for the purpose of the soil survey, there is little value in separating them. The pattern and proportion of soils are not uniform. An area shown on the map may be made up of only one of the dominant soils, or of two or more. The name of an undifferentiated group consists of the names of the dominant soils, joined by "and." Riverview and Congaree soils is an example.

While a soil survey is in progress, soil scientists take soil samples needed for laboratory measurements and for engineering tests. Laboratory data from the same kind of soil in other places are also assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kind of soil. Yields under defined management are estimated for all the soils.

want a general idea of the soils in a county, who want to compare different parts of a county, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide in managing a watershed, a wooded tract, or a wildlife area, or in planning engineering works, recreational facilities, and community developments. It is not a suitable map for planning the management of a farm or field, or for selecting the exact location of a road, building, or similar structure, because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect their

The soil associations in Miller and Seminole Counties are discussed in the following pages.

1. *Tifton-Norfolk-Grady association*

Nearly level and very gently sloping, well-drained to very poorly drained loamy or sandy soils that have a brownish or grayish loamy or clayey subsoil

This association is mainly on broad, nearly level to very gently sloping uplands, but a small part is along drainageways and in upland depressions. Slopes are mainly 0 to 5 percent.

This association makes up about 55 percent of the two counties and is about evenly distributed over Miller and Seminole Counties. Tifton soils make up about 50 percent of the association, Norfolk soils about 20 percent, Grady soils about 12 percent, and minor soils the remaining 18 percent.

The Tifton soils are well drained and are on smooth, higher parts of the landscape. Typically, the surface layer is dark

areas, campsites, and playgrounds, but the Grady soils have severe limitations for these uses because of wetness.

2. *Wagram-Troup association*

Nearly level and very gently sloping, well-drained sandy soils that have a brownish or yellowish loamy subsoil

This association is mainly on broad, nearly level to very gently sloping landscapes that have few natural drainageways. Most of the association is in the southeastern part of Miller County and the eastern part of Seminole County. Slopes are mainly 0 to 5 percent.

This association makes up about 20 percent of the two counties. Wagram soils make up about 48 percent of the association, Troup soils about 35 percent, and minor soils the remaining 17 percent.

The Wagram soils are well drained. Typically, the surface layer is dark grayish-brown loamy sand about 5 inches thick. It is underlain by light yellowish-brown loamy sand that extends to a depth of 23 inches. Below this, and extending to a depth of 62 inches, is yellowish-brown to brownish-yellow sandy loam or sandy clay loam.

Troup soils have a surface layer of dark grayish-brown loamy sand about 5 inches thick. It is underlain by yellowish-brown loamy sand that extends to a depth of about 23 inches. Below this, and extending to a depth of 57 inches, is yellowish-brown sandy loam or sandy clay loam that has a few strong-brown mottles in the lower part.

Minor soils in this association are the Grady, Ocilla, and Norfolk soils. The Grady and Ocilla soils are in areas slightly lower in elevation than the Wagram and Troup soils. The Norfolk soils are well drained and have more fine material in the upper part of the profile than the major soils.

Less than half of this association is cultivated or pastured; about 60 percent of it is woodland. The soils are suited to most crops grown locally, but the response to management is only fairly good because the soils are droughty. The main crops are peanuts, corn, and small grain. A considerable acreage is pastured and is suited to bahiagrass and bermudagrass.

Farms in this association average about 400 acres in size and are of the general type.

The major part of this association has slight to moderate limitations for most nonfarm uses associated with community development, such as light industry, dwellings, septic tank

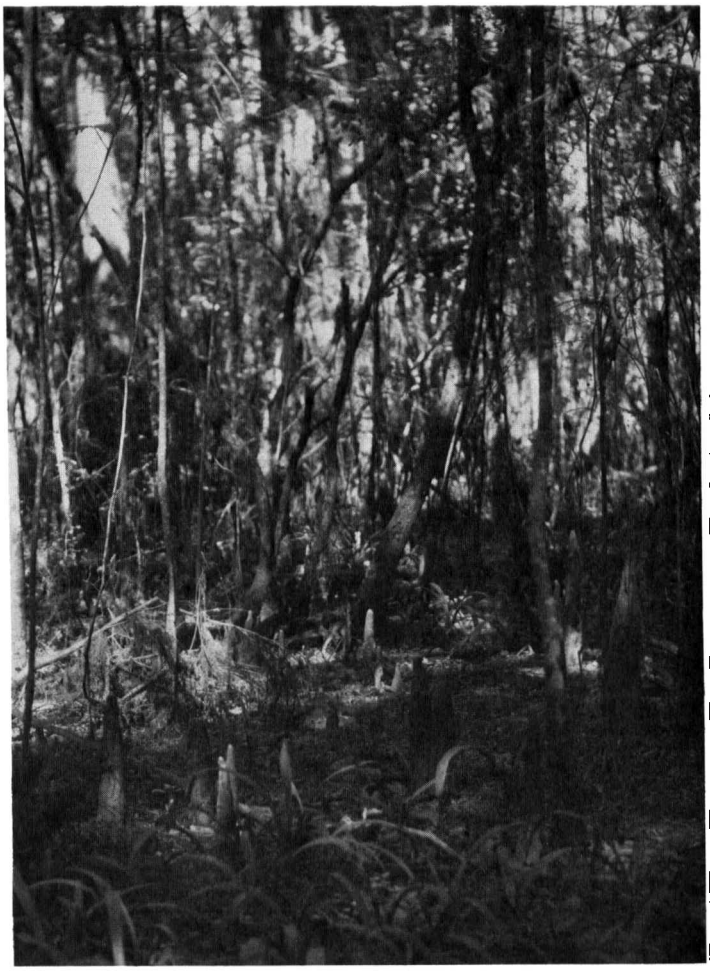
3. *Lucy-Orangeburg association*

Nearly level to gently sloping, well-drained sandy soils that have a reddish loamy subsoil

This association is mainly on broad, nearly level ridgetops that gently slope to drainageways or depressions. Slopes are mainly 0 to 5 percent, but some are as much as 8 percent.

This association makes up about 6 percent of the two counties. Lucy soils make up about 68 percent of the association, Orangeburg soils about 25 percent, and minor soils the remaining 7 percent.

The Lucy soils are mainly on smooth parts of the association. Typically, the surface layer is very dark grayish-brown loamy sand about 7 inches thick. It is underlain by brown to



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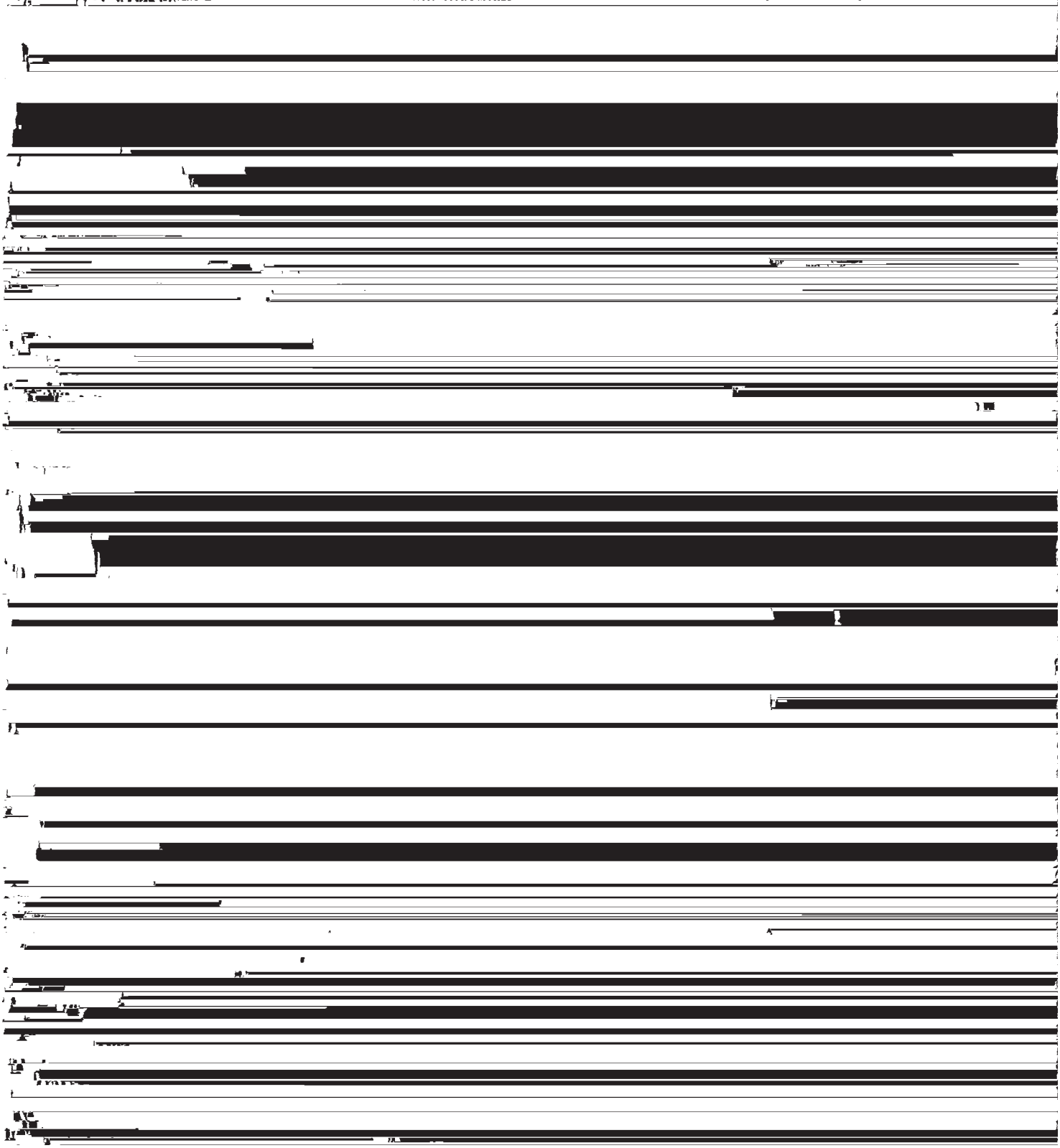
tion about any one mapping unit, it is necessary to read both the description of the mapping unit and the description of the soil series to which it belongs.

An important part of the description of each soil series is the soil profile, that is, the sequence of layers extending from [illegible] to rock or other underlying material

TABLE 1.—*Approximate acreage and proportionate extent of the soils*

Soil	Miller County	Seminole County	Total



County:

A1—0 to 4 inches, very dark grayish-brown (10YR 3/2) fine sandy loam; weak, medium, granular structure; friable; many fine and medium roots; strongly acid; clear, smooth boundary.

A2—4 to 7 inches, light brownish-gray (2.5Y 6/2) fine sandy loam; weak, fine, granular structure; very friable; common fine and medium roots; strongly acid; clear, smooth boundary.

B21t—7 to 22 inches, yellowish-brown (10YR 5/6) silty clay loam; common, fine, prominent, red mottles; moderate, medium, subangular blocky structure; firm; clay films on ped surfaces; few fine and medium roots; very strongly acid; gradual, wavy boundary.

B22t—22 to 46 inches, mottled yellowish-brown (10YR 5/6), red (2.5YR 4/8), and light-gray (10YR 7/2) silty clay; moderate, medium, subangular blocky structure; firm; few fine and medium roots; clay films on ped surfaces; very strongly acid; gradual, wavy boundary.

In a representative profile, the surface layer is dark-brown loam about 5 inches thick. Beneath this is about 33 inches of brown loam. Below this, and extending to a depth of 64 inches, is brown or dark yellowish-brown very fine sandy loam or fine sandy loam.

These soils are low to moderate in natural fertility and contain only a small amount of organic matter. Available water capacity is medium, and permeability is moderate. The rooting zone is deep, and tilth generally is good. Some areas are flooded occasionally for short periods. These soils are slightly acid to strongly acid throughout.

These soils are among the best in the two counties for farming. They are suited to most locally grown crops, and crops respond well to good management. About 40 percent

These soils are low in natural fertility and contain only a small amount of organic matter. Available water capacity is medium, and permeability is slow. These soils are strongly [redacted] throughout.

water is added during prolonged dry periods. Capability unit IIIe-3; woodland suitability group 3o1.

Esto loamy sand, 5 to 17 percent slopes (EuE).—This soil chiefly has short slopes along the sides of the [redacted]

light-gray (2.5Y 7/2) sandy clay loam; weak medium time. This soil is suited to sprinkler irrigation, and a supply

most other uses. The present vegetation consists mainly of mixed oak, blackgum, cypress, and slash pine. If adequately drained, these soils can be used for pasture, but only fair response can be expected for bahiagrass, white clover, and other pasture crops. Capability unit Vw-1; woodland suitability group 2w9.

Irvington Series

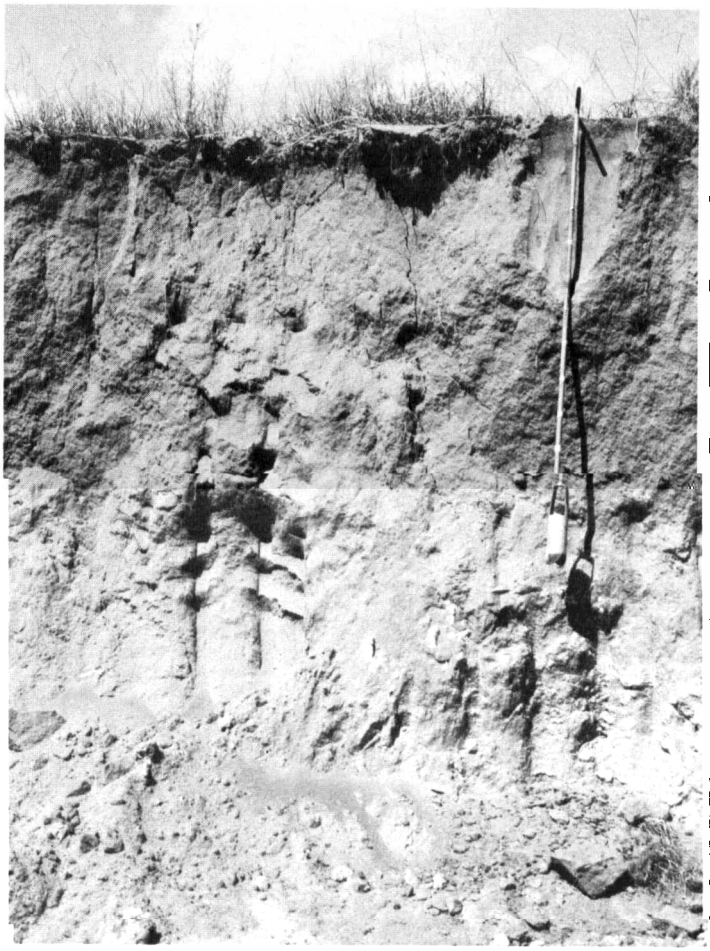
The Irvington series consists of moderately well drained, nearly level soils on uplands. These soils have a fragipan or [redacted] in the subsoil. They formed in loamy marine

in the upper part of the B2 horizon. Depth to the fragipan ranges from 22 to 32 inches. The fragipan ranges from 14 to 33 inches in thickness and is 5 to 20 percent plinthite.

Irvington soils commonly occur with Tifton and Grady soils. They have a fragipan, which is lacking in the Tifton and Grady soils. They are not so well drained as the Tifton soils, but they are better drained than the Grady soils.

Irvington sandy loam (Ig).—This moderately well drained, pebbly soil is in areas adjacent to, but slightly higher than, ponded areas or in slightly lower areas than the adjacent well-drained soils. Slopes range from 0 to 2 percent. The water table is at a depth of about 22 to 30 inches for a period of 1 to 2 months late in winter or in spring. Water

[redacted]



This soil can be tilled every year, and the risk of erosion is only slight. Lack of moisture in the hot summer frequently causes crop damage. Because organic matter is depleted at a moderately rapid rate, large amounts of crop residue should be returned to the soil if cultivated crops are grown. A cropping sequence that includes perennial grasses is most

yellowish-brown (2.5Y 6/4) mottles; moderate, medium, subangular blocky structure; firm; few medium roots; common medium and large concretions of iron and manganese in the lower 2 to 4 inches; mildly alkaline.

The A horizon ranges from 4 to 18 inches in thickness and from loamy sand to loam in texture. The B2t horizon is dark gray, gray, or light gray and ranges from clay to sandy clay. The yellowish-brown, yellowish-red, and olive-yellow mottles in the Bt horizon range from few to many. Concretions of iron and manganese are present in the lower part of the Bt horizon in some places.

Meggett soils commonly occur with the Grady and Goldsboro soils. They closely resemble the Grady soils but are neutral or mildly alkaline, whereas the Grady soils are very strongly acid.

B1t—7 to 12 inches, yellowish-brown (10YR 5/6) sandy loam; moderate, medium, granular structure; friable; few small concretions of iron; strongly acid; gradual, smooth boundary.

B21t—12 to 40 inches, yellowish-brown (10YR 5/6) sandy clay loam; weak, medium, subangular blocky structure; friable; patchy clay films on ped surfaces; very strongly acid; gradual, smooth boundary.

B22t—40 to 48 inches, yellowish-brown (10YR 5/8) sandy clay loam; few, fine, faint, strong-brown mottles; weak, medium, subangular blocky structure; friable; patchy clay films on ped surfaces; very strongly acid; gradual, smooth boundary.

B23t—48 to 62 inches, yellowish-brown (10YR 5/8) sandy clay loam; common, medium, distinct, strong-brown (7.5YR 5/6) and very pale brown (10YR 7/3) mottles and common,

Organic matter is depleted at a moderately rapid rate, even if management is good. Turning under all crop residue each year and including a cover crop in the cropping system are ways to maintain the content of organic matter and to increase the available water capacity.

This soil is well suited to irrigation. Row crops and pasture grasses respond if supplemental water is applied during prolonged dry periods. An adequate supply of water can be obtained from deep wells. Capability unit I-1; woodland suitability group 2o1.

Norfolk loamy sand, 2 to 5 percent slopes (NhB).—This well-drained soil is on uplands. It has a surface layer of grayish-brown or dark grayish-brown loamy sand about 5 to 6 inches thick. The rest of the profile is similar to the one described as representative of the Norfolk series.

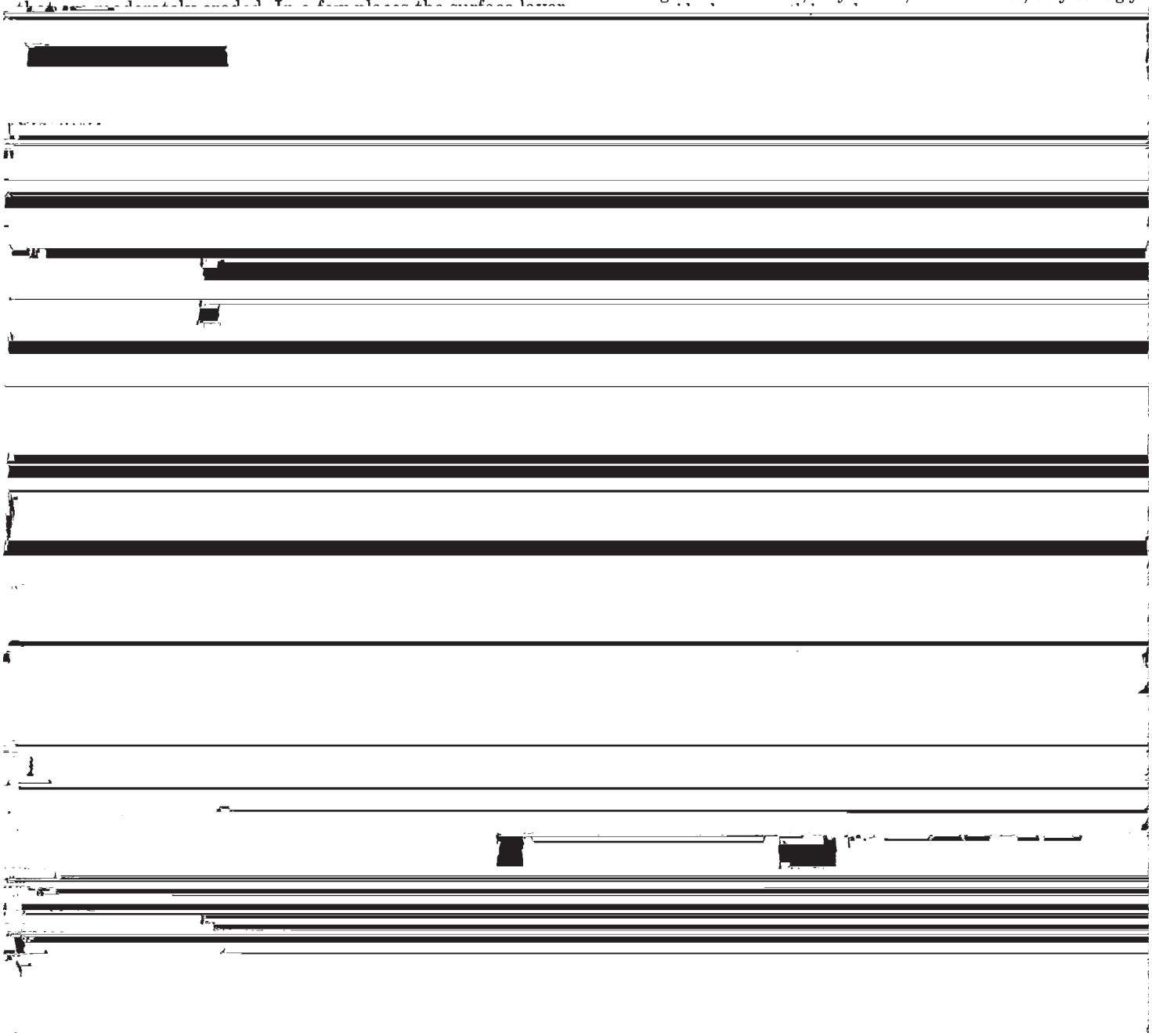
Included with this soil in mapping are a few small areas [redacted]

profile and moderate in the subsoil. The rooting zone is thick, and tilth is good. These soils are very strongly acid throughout.

Although these soils have a thick rooting zone, they are only fairly suitable for cultivated crops and for pasture plants because they are sandy and have a high water table in wet seasons. They are well suited to woodland. Most of the acreage is woodland, but some is used for cultivated crops or pasture. The natural vegetation is pines and mixed hardwoods.

Representative profile of Ocilla loamy sand, in a wooded area 2 miles southwest of the junction of Georgia Highway 91 and U.S. Highway 27, seven-eighths mile south of Georgia Highway 91, Miller County:

A1—0 to 6 inches, dark-gray (10YR 4/1) loamy sand; weak, fine, granular structure; very friable; few fine roots; very strongly



increase the available water capacity. The response to fertilizer is fair. Plant nutrients are readily leached from this soil. Capability unit IIIw-1; woodland suitability group 3w2.

Orangeburg Series

The Orangeburg series consists of well-drained soils on uplands. These soils are on smooth landscapes and in areas where slopes are short. They formed in loamy marine deposits. Slopes range from 0 to 8 percent. Orangeburg soils

is good, and the soil is well suited to most locally grown crops. It is also well suited to pasture plants and to pine trees. Most of the acreage is cultivated.

This soil can be tilled intensively, and the risk of erosion is minimal. Any suitable crop can be grown continuously if enough plant residue is returned to maintain good tilth (fig. 7). A planned sequence of crops aids in the control of weeds, insects, and plant diseases and results in the more efficient use of fertilizer. All plant residue should be left on the surface between seasons of crop growth.

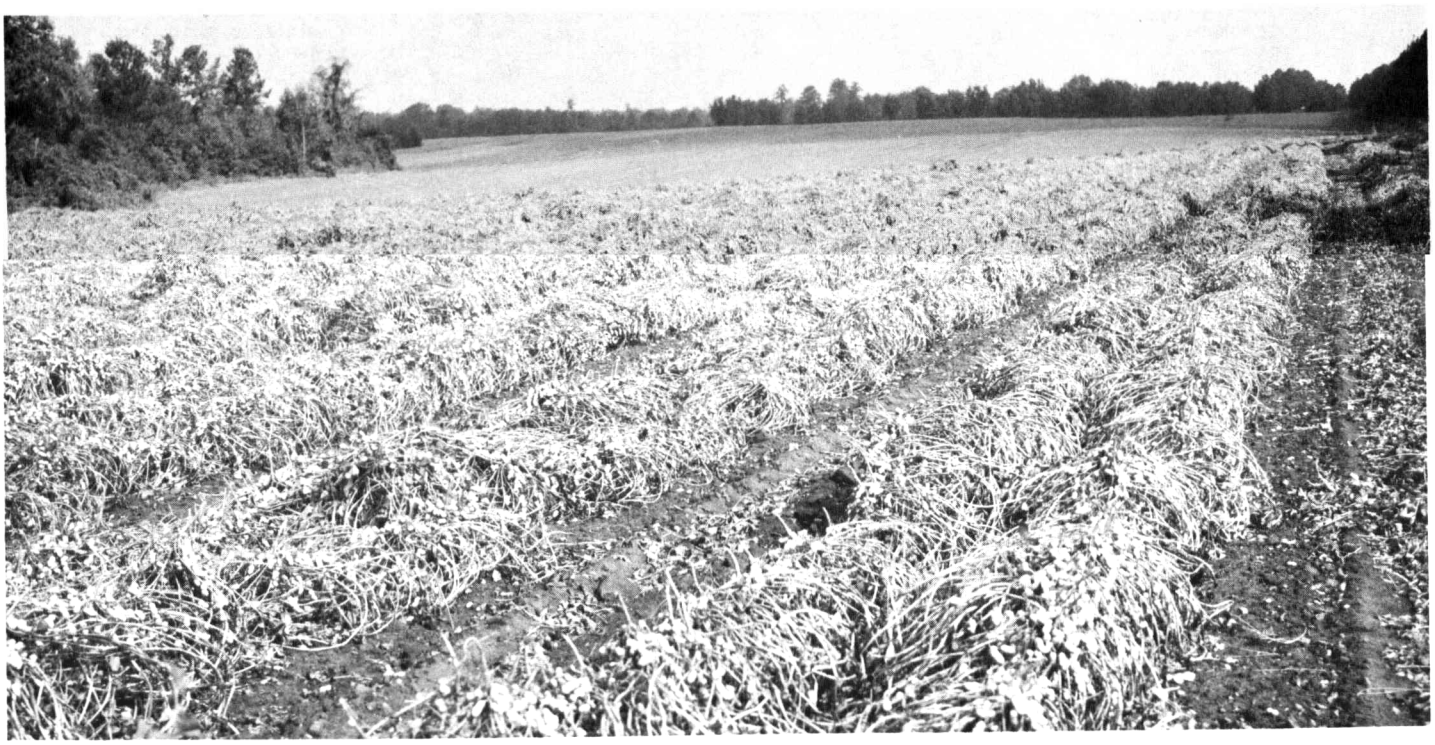


Figure 7.—Harvest of peanuts on Orangeburg loamy sand, 0 to 2 percent slopes.

B22tg—41 to 61 inches, light-gray (10YR 7/1) sandy clay loam; common, medium, distinct, strong-brown (7.5YR 5/8) and yellowish-red (5YR 5/6) mottles; weak, medium, subangular blocky structure; friable; very strongly acid.

The A horizon ranges from 24 to 38 inches in thickness. The Bt horizon is sandy clay loam, but in many places it has lenses of sandier material as well as lumps of sandy clay. It has variable amounts of yellow, brown, and red mottles. Water stands in some areas for long periods in wet periods in winter and spring.

Pelham soils commonly occur with the Grady and Ocilla soils. Pelham soils do not have so much fine-textured material within 40 inches of the surface as the Grady soils, which have a more clayey B horizon. The Pelham soils are wetter than the Ocilla soils.

Pelham sand (Pa).—This soil is in depressions, broad flats, and drainageways. Slopes are 0 to 1 percent. Included with this soil in mapping are some small areas of Grady and Ocilla soils.

Most of the acreage is in its natural vegetation of mixed hardwoods and pines. A small acreage has been cleared and is used for pasture.

This soil is flooded several times each year for short periods, especially in winter and spring. Runoff is slow, and water ponds in many low areas.

Because of flooding, this soil is not well suited to cultivated crops, although a few small areas are cultivated. The soil requires surface drainage if it is used for pasture. It is suitable for woodland, and it provides a fair habitat for woodland and wetland wildlife. Capability unit Vw-2; woodland suitability group 2w3.

Riverview Series

The Riverview series consists of well-drained soils on flood plains. These soils formed in loamy alluvium that washed from soils of the Piedmont and the Coastal Plain. In these counties the Riverview soils occur only with the Congaree soils, and all of the acreage mapped is along the Chattahoochee River in Seminole County.

In a representative profile the surface layer is dark-brown loam about 6 inches thick. The subsoil, to a depth of about 46 inches, is brown silty clay loam. Between depths of 46 and 62 inches, the subsoil is yellowish-red sandy clay loam. Small pockets of sandy loam are common in the upper 46 inches of the profile.

Riverview soils are low to moderate in natural fertility and contain only a small amount of organic matter. Available water capacity is medium, and permeability is moderate. The rooting zone is deep, and tilth is generally good. Some areas are flooded occasionally for short periods. These soils are [illegible] throughout.

B22—13 to 28 inches, brown (7.5YR 4/4) silty clay loam; moderate, medium, subangular blocky structure; friable; common fine mica flakes; common fine and medium roots; few small pockets of sandy loam; strongly acid; gradual, wavy boundary.

B23—28 to 46 inches, brown (7.5YR 4/4) silty clay loam; moderate, medium, granular and subangular blocky structure; friable; common fine mica flakes; few fine and medium roots; few small pockets of sandy loam; strongly acid; gradual, wavy boundary.

B3—46 to 62 inches, yellowish-red (5YR 4/8) sandy clay loam; weak, medium, subangular blocky structure; friable; common fine mica flakes; few clay films on some ped surfaces; few fine roots; very strongly acid.

The A1 and Ap horizons are dark-brown, brown, yellowish-brown, or dark yellowish-brown loam or fine sandy loam 4 to 7 inches thick. The B2 horizon is mostly silty clay loam, but in some places it is silt loam to loam. A buried profile or a C horizon occurs below a depth of about 28 inches in some places. It ranges from sandy clay loam to sandy loam. Mica flakes range from few to common throughout the profile.

Riverview soils commonly occur with Congaree and Angie soils and, to a limited extent, with Orangeburg soils. They have a B horizon, whereas Congaree soils do not. The Riverview soils do not have so much clay in the B horizon as the Angie soils, and they lack the gray mottles within 30 inches of the surface. They are browner than Orangeburg soils.

Riverview and Congaree soils (Riv).—This undifferentiated group of well-drained, loamy soils is along the flood plain of the Chattahoochee River. These soils occur without regularity of pattern, in areas that range from 200 to 300 acres in size. Slopes range from 0 to 2 percent.

Soils of both series do not occur in every area mapped as this unit, but many of the areas are about one-half Riverview soils and one-third Congaree soils. These soils could be mapped separately if the intensity of their use warranted it. They are mapped together, however, because they are similar in use and behavior and occupy only a relatively small acreage.

Profiles of the Riverview soils and the Congaree soils are similar to the ones described as representative for their respective series, but the surface layer ranges from loam to fine sandy loam.

Included with these soils in mapping are small areas of soils that are similar to Riverview and Congaree soils but are more sandy throughout. Also included are small areas of Angie soils.

Most of the acreage is in a mixed stand of loblolly pine and hardwoods.

Soils of this mapping unit can be tilled every year with little risk of erosion, but in some years they are flooded for short periods. Any suitable crop can be grown year after year if fertilizer is applied and if enough plant residue is returned to maintain good tilth. A planned sequence of crops

loamy texture. Tifton soils are important for farming and occur throughout Miller and Seminole Counties.

In a representative profile, the surface layer is dark grayish-brown sandy loam about 7 inches thick (fig. 8). The subsoil, reaching to a depth of 62 inches, is yellowish-brown sandy clay loam that has strong-brown, brownish-yellow, and red mottles in the lower part. Soft plinthite is in the lower part of the subsoil. Common to many small concretions of iron are scattered throughout the upper part of the profile.

These soils are moderately low in natural fertility and contain only a small amount of organic matter. Permeability is moderate, and available water capacity is medium. Tilth is good, and the rooting zone is thick. These soils are strongly acid to very strongly acid throughout.

Tifton soils are among the best in the two counties for farming. They are well suited to locally grown crops, grasses, and pine trees. Most of the acreage is cultivated, but some is pastured or wooded. The natural vegetation is pine trees.

subangular blocky structure; very friable; many small concretions of iron; strongly acid; clear, smooth boundary.

B21cn—10 to 38 inches, yellowish-brown (10YR 5/8) sandy clay loam; weak, medium, subangular blocky structure; friable; common small concretions of iron; clay films on ped surfaces and around iron concretions; very strongly acid; gradual, smooth boundary.

B22tcn—38 to 52 inches, yellowish-brown (10YR 5/8) sandy clay loam; few, fine, faint, strong-brown mottles; weak, medium, subangular blocky structure; friable; common small concretions of iron; clay films on ped surfaces and around iron concretions; very strongly acid; gradual, smooth boundary.

B23t—52 to 62 inches, yellowish-brown (10YR 5/6) sandy clay loam; common, medium, faint, strong-brown (7.5YR 5/8) and brownish-yellow (10YR 6/6) mottles and common, medium, prominent, red (2.5YR 4/6) mottles; weak, medium, subangular blocky structure; friable; patchy clay films on ped surfaces; 15 to 20 percent soft plinthite; common small concretions of iron; very strongly acid.

The A1 or Ap horizon is very dark grayish-brown, dark grayish-brown, or yellowish-brown sandy loam that ranges from 4 to 9

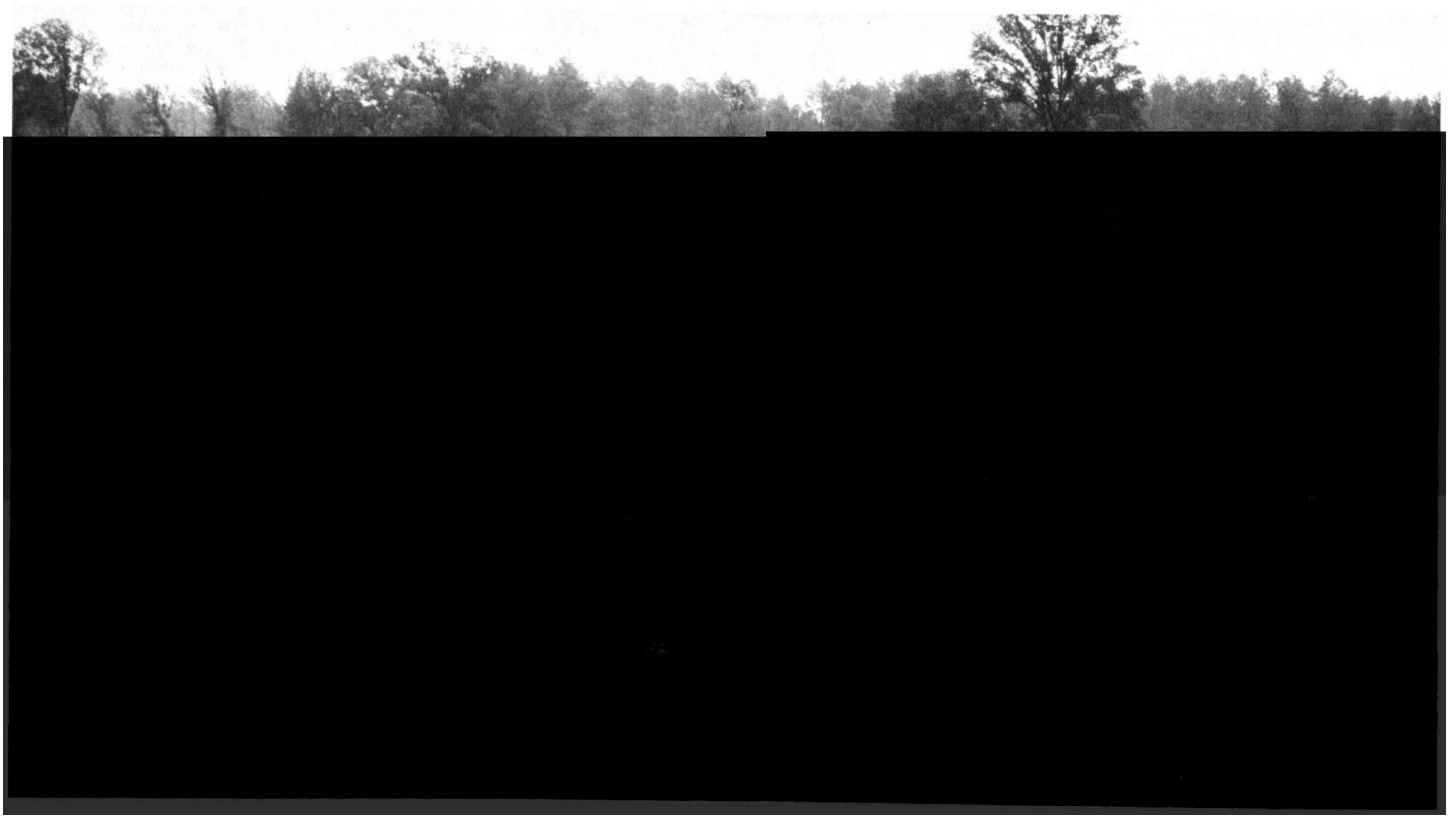


Figure 9.—**Grassed waterway in an area of Tifton sandy loam, 2 to 5 percent slopes.**

that have slopes of less than 2 percent. Also included in some areas are small areas of Norfolk soils.

This Tifton soil is one of the better soils in the survey area for farming. It is well suited to most locally grown crops and to pasture plants and pine trees. Crops respond well to fertilization and other good management practices (fig. 10). Most of the acreage is cultivated.

Because of slope, the hazard of erosion is moderate. Tilling on the contour, terracing, and stripcropping help to control erosion in cultivated areas.

This soil should be managed so that soil losses from erosion are within allowable limits. The steepness and length of slopes or the erosion control practices installed govern the kind of cropping system needed to accomplish this. An example of a suitable cropping system, where slopes are 3 percent and the soil is terraced and farmed on the contour, is a 3-year rotation consisting of 1 year of cotton, 1 year of corn that is "slit" planted, and 1 year of peanuts followed by small grain for cover. All plant residue should be left on the surface between seasons of crop growth.

Organic matter is depleted at a moderately rapid rate, even if management is good. Returning all crop residue and including cover crops in the rotation are ways to maintain the content of organic matter and to increase the available water capacity. In areas where peanuts are grown, small concretions of iron are troublesome because they are mixed with the harvested peanuts. Plant nutrients are not leached so readily from this soil as they are from the more sandy soils.

during prolonged dry periods. An adequate supply of water can be obtained from deep wells. Capability unit IIe-2; woodland suitability group 2o1.

Troup Series

The Troup series consists of well-drained soils on uplands. These soils occur in fairly large areas where slopes are mainly smooth. Slopes range from 0 to 5 percent. Troup soils formed in sandy and loamy marine deposits. They occupy a sizable acreage in the two counties, but they are not among the more important soils for farming.

In a representative profile, the surface layer is very dark grayish-brown sand about 4 inches thick. It is underlain by yellowish-brown and light yellowish-brown sand that extends to a depth of about 57 inches. Below this, and extending to a depth of 78 inches, is yellowish-brown sandy loam and sandy clay loam that has a few strong-brown mottles in the lower part.

Troup soils are low in natural fertility and contain only a small amount of organic matter. The available water capacity is low, and permeability is moderate to moderately rapid. The rooting zone is deep, and tilth is good. These soils are strongly acid to very strongly acid throughout.

Most crops grown in the survey area can be grown on these soils, but crop response is only fair because the soils are droughty. Most of the acreage is woodland, but some of it is used for cultivated crops and pasture. The native vegetation is mainly a mixed stand of hardwoods and pines.

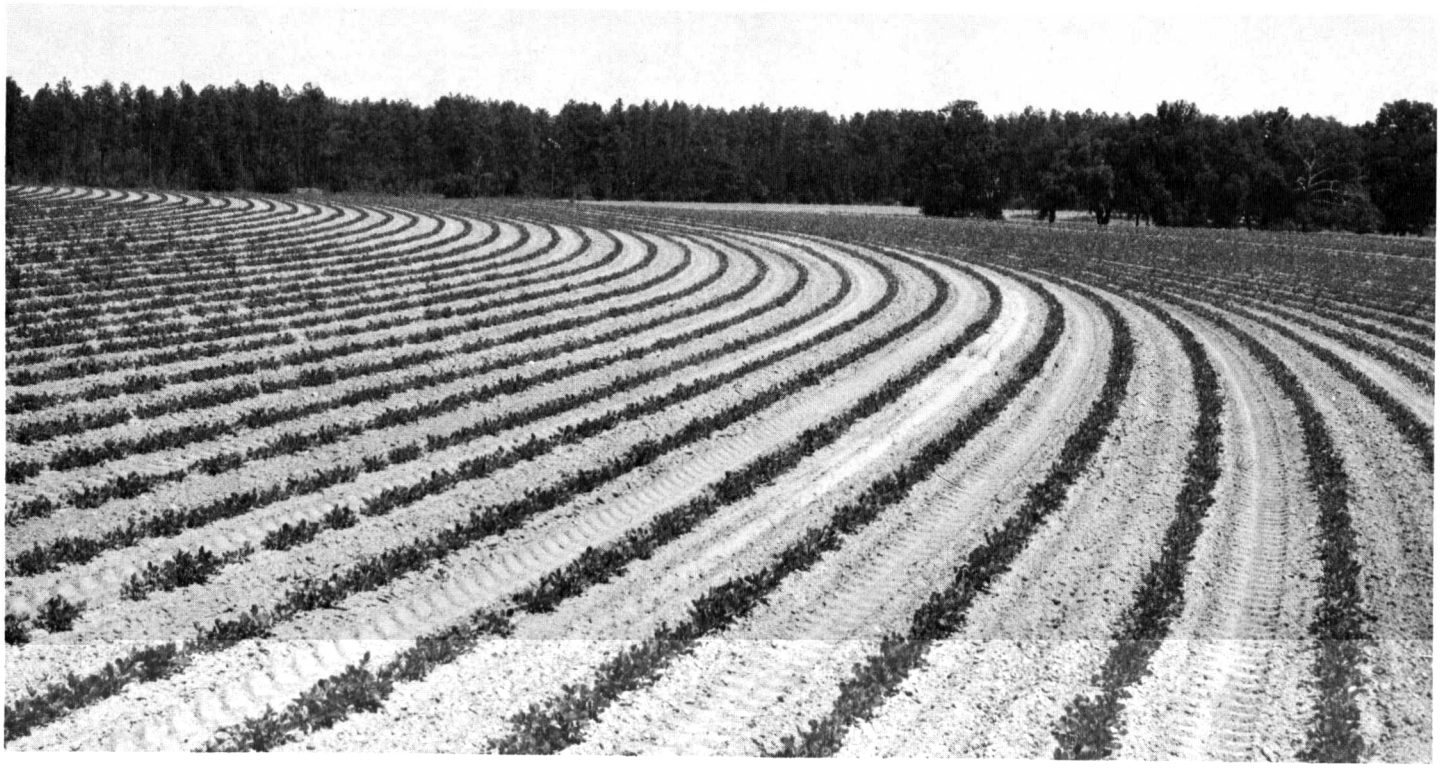


Figure 10.—**Peanuts growing in a contoured and terraced area of Tifton sandy loam, 2 to 5 percent slopes.**

and five-eighths mile west of the Decatur County line, Seminole County:

A1—0 to 4 inches, very dark grayish-brown (10YR 3/2) sand; weak, fine, granular structure; very friable; many fine roots; strongly acid; gradual, smooth boundary.

A21—4 to 42 inches, yellowish-brown (10YR 5/4) sand; single grained; loose; few fine and medium roots; strongly acid; gradual, smooth boundary.

A22—42 to 57 inches, light yellowish-brown (10YR 6/4) sand; single grained; loose; strongly acid; gradual, smooth boundary.

B1t—57 to 65 inches, yellowish-brown (10YR 5/6) sandy loam; moderate, medium, granular structure; very friable; very strongly acid; gradual, smooth boundary.

B2t—65 to 78 inches, yellowish-brown (10YR 5/6) sandy clay loam; few fine faint strong brown mottles; weak medium

soil, but crop responses are only fair because the soil is droughty. Most of the acreage is in trees, but some is used for cultivated crops and pasture.

This soil can be tilled every year, and the risk of erosion is only slight. Crop damage and sometimes crop loss are frequently caused by lack of moisture in the hot summer. Organic matter is depleted at a rapid rate. Therefore, if cultivated crops are grown, large amounts of crop residue should be returned to the soil. A cropping sequence that includes perennial grasses is most beneficial. Annual crops that produce a large amount of residue are also satisfactory. An example of a suitable cropping system is a 4-year

This soil is droughty and is only fairly suitable for crops grown in the survey area. Because of slope, the hazard of erosion is severe. This soil is suited to pine trees.

Crop damage and sometimes crop loss are frequently caused by a lack of moisture in the hot summer. Organic matter is depleted at a rapid rate. Therefore, if cultivated crops are grown, a large amount of crop residue should be returned to the soil. A cropping sequence that includes perennial grasses is most beneficial. An example of a suitable cropping system is a 6-year rotation consisting of 4 years of

of the Lucy soils, and they have more fine material within 40 inches of the surface than the Troup soils.

Wagram loamy sand, 0 to 5 percent slopes (WeB).—This well-drained soil is on uplands and typically occurs in large areas. Included with it in mapping are small areas of Norfolk, Troup, and Lucy soils.

Most locally grown crops can be grown, but crop response is only fair because the soil is droughty. Most of the acreage is cultivated, but pasture plants and pine trees do well on this soil.

Counties mainly to control erosion, dispose of excess water, and maintain good tilth and productivity. These general practices are discussed mainly according to capability classes and subclasses.

Soils such as the nearly level Norfolk and Tifton soils in capability class I have only slight limitations. Any suitable crop can be grown continuously if enough plant residue is returned to maintain good tilth. A planned sequence of crops aids in the control of weeds, insects, and plant diseases and results in the more efficient use of adequate fertilizer.

Sloping Norfolk and Tifton soils, as well as similar soils, are susceptible to erosion. Consequently, they are in capability subclasses IIe and IIIe. The degree of susceptibility depends on the erodibility of the soil, the frequency and intensity of rainfall, the degree of slope, and the length of slope. These properties determine whether the farmer uses straight rows, contour cultivation with or without terraces, or stripcropping. The more gently sloping soils need only contour cultivation and a cropping system that provides medium to large amounts of crop residue. Sloping soils may need a combination of straight-row farming, contour farming without terraces, or stripcropping, and a cropping system that includes annual close-growing crops, high residue producing crops, or perennial crops. A grassed waterway or drainage outlet is essential in managing these soils (fig. 11).

For some of the soils, especially the sandy ones, such as the Lucy and Wagram soils in capability subclass IIs, it is mainly necessary to return large amounts of crop residue and to manage this residue. Cropping sequences that include perennial grasses or legumes are beneficial. Stripcropping and contour cultivation are also important.

Excess water is the main limitation in several soils, such as the Goldsboro and Irvington soils in capability subclass IIw. The drainage needed depends on the amount of water in the soil and the kinds of crops grown. Two methods are generally used, open ditches and covered tile drains. After the water is controlled, only practices that help to maintain productivity and good tilth are needed.

Several management practices contribute to maintenance of soil productivity and good tilth and help to prevent soil losses. Among these are—

1. Regular applications of lime and fertilizer according to the needs of the crop.
2. Good management of crop residue, generally by shredding and leaving the residue on the soil surface between seasons of crop growth.
3. Use of suitable cropping systems.

Among other practices that may be needed are—

1. Grassed waterways or outlets. These are essential for the disposal of the runoff that results from straight-row farming, contour farming, terraces, or stripcropping.
2. A field border of perennial grass. This is needed to control erosion in some places at the edge of fields and to reduce weed growth. Such a border is attractive and allows more efficient operation of farm equipment.
3. Farm roads and fences. These should be located on the crest of the slopes, where the watershed divides, or on the contour. They should permit field and row arrangement that facilitates efficient farming operations. Fences may be located in or adjacent to natural waterways.

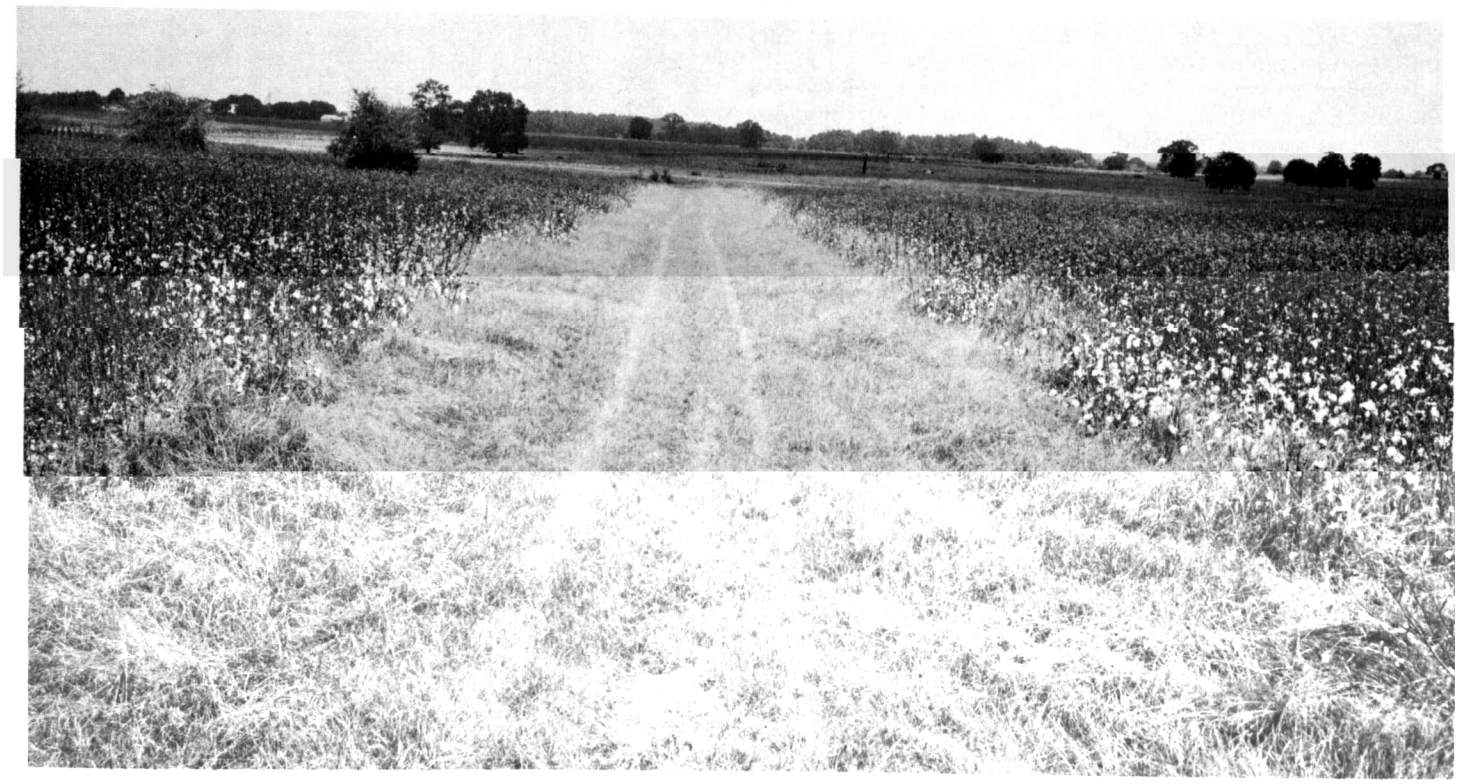


Figure 11.—**A waterway, sodded in bahiagrass, in an area of Tifton sandy loam, 2 to 5 percent slopes. This soil is in capability unit IIe-2.**

Capability Grouping

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. The soils are grouped according to their limitations when used for field crops, the [illegible] they are so used, and the way they

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Subclass IIe. Soils that are subject to moderate erosion if they are protected.

Unit IIe-1. Very gently sloping, well-drained soils

Class VI soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture, woodland, or wildlife habitat.

Subclass VIe. Soils that are subject to severe erosion if they are not protected by perennial cover

PEANUTS: Plant 80 to 100 pounds of seed per acre; apply 0 to 20 pounds of nitrogen (N), 40 to 50 pounds of phosphoric acid (P_2O_5), and 60 to 75 pounds of potash (K_2O); do not apply nitrogen if peanuts are planted in soils that have high residual fertility; apply gypsum for Virginia type peanuts and

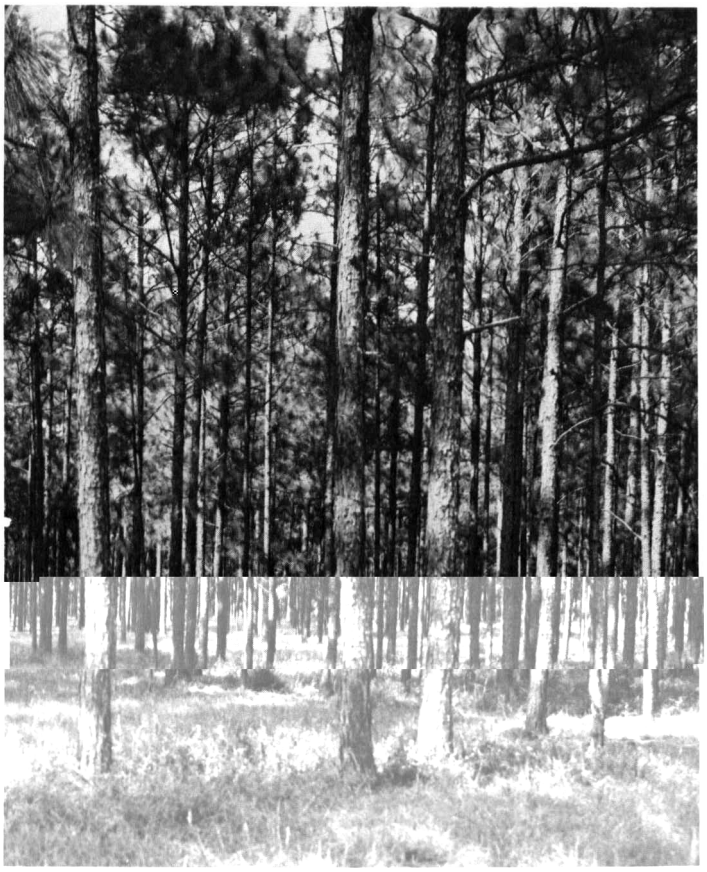
TABLE 2.—*Estimated acre yields of the principal crops grown under a high level of management*

[Yields listed are average yields expected under a high level of management that does not include irrigation. A blank space indicates that the crop is not suited to the particular soil or generally is not grown]

Soil	Corn	Cotton lint	Peanuts	Oats	Soybeans	Coastal bermuda grass for—		Bahiagrass for pasture
						Hay	Pasture	
	Bushels	*Pounds*	*Pounds*	*Bushels*	*Bushels*	*Tons*	*A.U.M.*[1]	*A.U.M.*[1]
Angie fine sandy loam	50	400		40	20	4.5	7.0	7.0
Esto loamy sand, 2 to 5 percent slopes	45	450	1,500	45	25	4.5	6.5	5.7
Esto loamy sand, 5 to 17 percent slopes							5.5	5.0
Goldsboro sandy loam, 0 to 2 percent								

TABLE 3.—*Woodland groups and factors affecting management*

Woodland suitability groups and map symbols	Potential productivity		Management problems			Species suitable for planting
	Tree species	Site class	Erosion hazard	Equipment limitations	Seedling mortality	
Group 1o7: Riv. Well-drained soils that have a loamy surface layer and subsoil or underlying layers; in some places the lower layers are sandy; on flood plains of streams; suited to broadleaf trees or southern pines or both.	Loblolly pine Slash pine Sweetgum Water oak Yellow-poplar Sycamore	100 100 110 80 120 ---	Slight	Slight	Slight	Slash pine, loblolly pine, yellow-poplar, sycamore, cottonwood, cherrybark oak, and water oak.
Group 1w9: Myt. Poorly drained soils that have a sandy or loamy surface layer and a clayey subsoil; on flood plains of streams; suited to broadleaf trees or southern pines or both.	Slash pine[1] Loblolly pine[1] Water oak[1] Tupelos Pond pine	100 100 90–100 --- 80	Slight	Severe[2]	Severe[2]	Loblolly pine[3], slash pine[3], sweetgum, sycamore[3], water tupelo, and water oak.
Group 2o1: NhA, NhB, OeA, OeB, OeC2, TuA, TuB. Well-drained soils that have a sandy or loamy surface layer and a loamy subsoil; on uplands; better suited to southern pines than to other trees.	Loblolly pine Slash pine Longleaf pine	90 90 70	Slight	Slight	Slight	Slash pine and loblolly pine.
Group 2o7: Ig. Moderately well drained soils that have a	Loblolly pine Slash pine Yellow-poplar	90 90 90	Slight	Slight	Slight	Slash pine, loblolly pine, yellow-poplar, cherrybark oak



In the column headed "Tree species" is a list of some of the commercially important trees that are adapted to the soil. These are the trees that woodland managers will generally favor in intermediate or improvement cuttings. Also given is

the potential productivity of these trees in terms of site class. The site class is the average height of dominant trees, in feet, at age 30 for cottonwood; at age 35 for sycamore; at age 25 for planted pines; and at age 50 for all other species or types

TABLE 4.—*Suitability of soils for elements of wildlife habitat and kinds of wildlife*

Soil series and map symbol	Elements of wildlife habitat							Kinds of wildlife		
	Grain and seed crops	Grasses and legumes	Wild herbaceous upland plants	Hardwood trees, shrubs, and vines	Coniferous woody plants	Wetland food and cover plants	Shallow water developments	Open-land	Wood-land	Wet-land
Angie: Av	Good	Good	Good	Good	Fair	Poor	Poor	Good	Good	Poor.
Esto:										
EuB	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
EuE	Poor	Good	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Goldsboro: GmA	Good	Good	Good	Good	Good	Poor	Fair	Good	Good	Fair.
Grady: Grd	Very poor.	Poor	Fair	Fair	Poor	Fair	Good	Poor	Fair	Fair.
Irvington: Ig	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Lucy: LMB	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Meggett: Myt	Poor	Fair	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair.
Norfolk: NhA, NhB	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Ocilla: Oh	Fair	Fair	Good	Fair	Good	Fair	Fair	Fair	Good	Fair.
Orangeburg:										
OeA, OeB	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
OeC2	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Pelham: Pa	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
Riverview and Congaree: Riv	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Tifton: TuA, TuB	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Troup: TzB, TzC	Poor	Fair	Fair	Fair	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
Wagram: WeB	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.

A rating of good means that the element of wildlife habitat or the habitat for the specified kind of wildlife is easily created, improved, and maintained, that few or no limitations affect management, and that satisfactory results can be expected.

Fair means the element of wildlife habitat and the kind of habitat can be created, improved, or maintained in most places. Moderate intensity of management and fairly frequent attention, however, may be required for satisfactory results.

Poor means that the limitations for the designated use are rather severe. Habitats can be created, improved, or maintained in most places, but management is difficult and requires intensive effort.

ing. These crops provide food and cover for wildlife. Among the grasses are bahiagrass, ryegrass, and panicgrass, and among the legumes are annual lespedeza, shrub lespedeza, and clovers and vetches.

WILD HERBACEOUS UPLAND PLANTS: This group consists of native or introduced perennial grasses, forbs, and weeds that provide food and cover for upland wildlife. Beggarweed, perennial lespedeza, wild bean, pokeweed, partridgepea, and cheatgrass are typical examples. On rangeland, typical plants are bluestem, grama, perennial forbs, and legumes.

HARDWOOD TREES, SHRUBS, AND VINES: These plants are nonconiferous trees, shrubs, and woody vines that produce food for wildlife in the form of fruits, nuts, buds, catkins, or

WETLAND FOOD AND COVER PLANTS: In this group are annual and perennial herbaceous plants that are generally native to moist and wet sites. These plants furnish food and cover mostly for wetland wildlife. Typical examples are [redacted] and also rushes, sedges,

7. Develop preliminary estimates pertinent to construction in a particular area.

Most of the information in this section is presented in tables 5, 6, 7, and 8. Table 5 shows the results of engineering [redacted] table 6 gives estimates for

help evaluate the soils for engineering purposes. The engineering classifications given are based on data obtained by mechanical analyses and by tests to determine liquid limits and plastic limits. The mechanical analyses were made by combined sieve and hydrometer methods.

Moisture-density (or compaction) data are important in earthwork. If a soil material is compacted at a successively higher moisture content, assuming that the compactive effort remains constant, the density of the compacted material increases until the *optimum moisture content* is reached. The highest dry density obtained in the compactive test is termed *maximum dry density.*

The data on volume change indicate the amount of shrinkage and swelling that is obtained from samples prepared at optimum moisture content and then subjected to drying and wetting. The total change that can occur in a specified soil is the sum of the values given for shrinkage and for swelling.

Liquid limit and plasticity index indicate the effect of water on the strength and consistence of soil material. As the moisture content of a clayey soil is increased, the material changes from a semisolid to a plastic state. If the moisture content is further increased, the material changes from a plastic to a liquid. The plastic limit is the moisture content at which the soil material changes from a semisolid to a plastic; and the liquid limit, from a plastic to a liquid. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is plastic.

Soil Properties Significant to Engineering

Several estimated soil properties significant to engineering are given in table 6. These estimates are made for typical soil profiles, by layers sufficiently different to have different significance for soil engineering. The estimates are based on field observations made in the course of mapping, on test data for these and similar soils, and on experience with the same kinds of soil in other counties. Depth to bedrock is not given in the table, because it is great enough that it does not affect the use of soils in this survey area. Following are explanations of some of the columns in table 6.

Depth to seasonal high water table is distance from the

capacity and the amount at the wilting point of most crop plants.

Reaction is the degree of acidity or alkalinity of a soil, expressed in pH values. The pH value and terms used to describe soil reaction are explained in the Glossary.

Shrink-swell potential is the relative change in volume to be expected of soil material with changes in moisture content, that is, the extent to which the soil shrinks as it dries out or swells when it gets wet. Extent of shrinking and swelling is influenced by the amount and kind of clay in the soil. Shrinking and swelling of soils causes much damage to building foundations, roads, and other structures. A high shrink-swell potential indicates a hazard to maintenance of structures built in, on, or with material having this rating.

Flood hazard is not in this table, but the Angie, Congaree, Goldsboro, Grady, Irvington, Meggett, Pelham, and Riverview soils are subject to flooding. More information about the flood hazard of an individual soil can be learned by referring to the description of that soil in the section "Descriptions of the Soils."

Engineering Interpretations of Soils

The estimated interpretations in table 7 are based on the engineering properties of soils shown in table 6, on test data for soils in this survey area and others nearby or adjoining, and on the experience of engineers and soil scientists with the soils of Miller and Seminole Counties. In table 7, ratings are used to summarize the limitation or suitability of the soils for all listed purposes other than for drainage of cropland and pasture, irrigation, ponds and reservoirs, embankments, and terraces and diversions. For these particular uses, table 7 lists those soil features not to be overlooked in planning, installation, and maintenance.

Soil limitations are indicated by the ratings slight, moderate, and severe. Slight means that soil properties are generally favorable for the rated use, or in other words, limitations are minor and easily overcome. Moderate means that some soil properties are unfavorable but can be overcome or modified by special planning and design. Severe means that soil properties are so unfavorable and so difficult to correct or over-

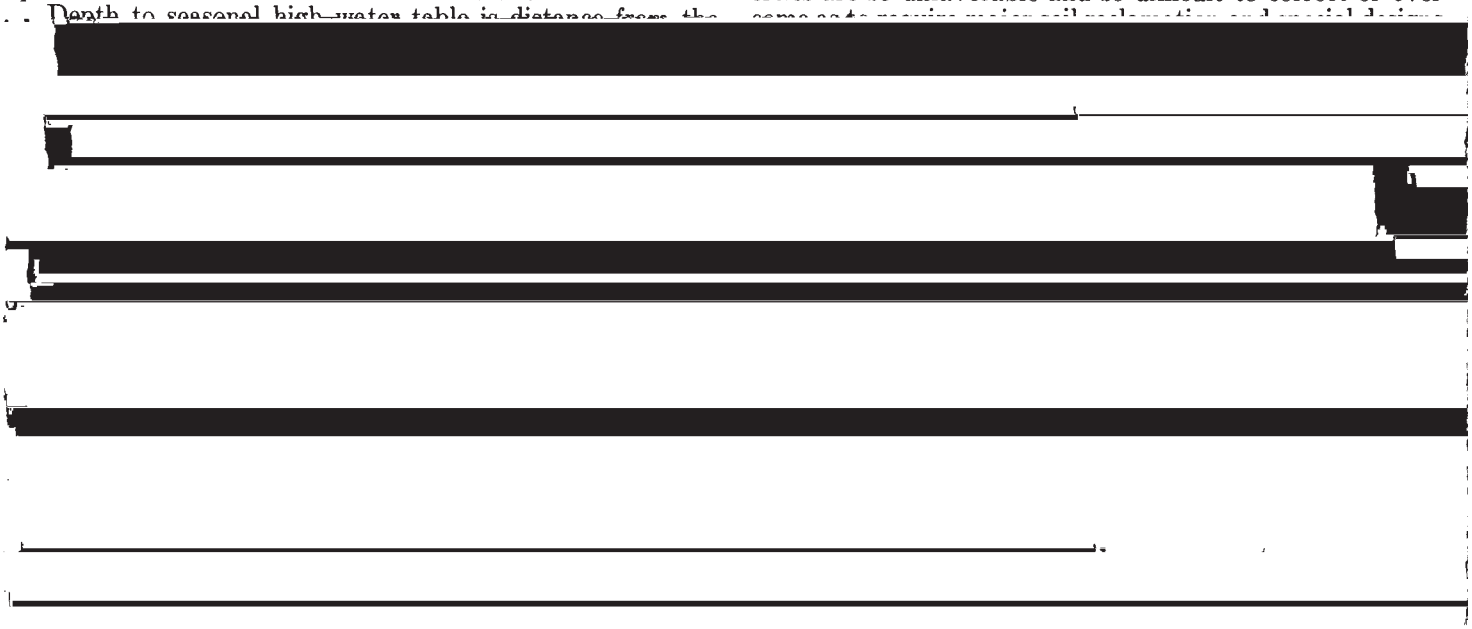


TABLE 5.—*Engineering*

[Tests made by Georgia State Highway Department according to standard

Soil name and location	Parent material	Report number S68-Ga-	Depth	Moisture-density[1]		Volume change[2]		
				Maximum dry density	Optimum moisture	Shrinkage	Swell	Total volume change
			Inches	*Pounds per cubic foot*	*Percent*	*Percent*	*Percent*	*Percent*
Grady soils:								
Miller County: 1 3/5 miles west of Baker County Line, south side of Georgia Highway No. 91. (Modal.)	Clayey marine sediment.	100–4–1	0–5	113	11	1.0	10.2	11.2
		100–4–3	11–28	104	19	12.3	5.5	17.8
		100–4–4	28–62	99	23	8.7	7.0	15.7
Miller County: 3/4 mile west of Baker County line, 4 miles north of Decatur County line. (More clay in the 11- to 22-inch layer than in the modal.)	Clayey marine sediment.	100–6–1	0–5	108	13	2.2	6.9	9.1
		100–6–3	8–42	95	23	7.6	4.3	11.9
		100–6–4	42–64	100	21	10.3	5.6	15.9
Norfolk loamy sand:								
Seminole County: 5/8 mile west of Georgia Highway No. 39, 1/8 mile north of Georgia Highway No. 91. (Modal.)	Medium-textured marine sediment of sandy clay loam and sandy loam.	125–1–1	0–6	116	9	.4	1.1	1.5
		125–1–3	13–41	114	13	6.0	3.7	9.7
		125–1–5	51–64	115	13	2.8	.1	2.9
Seminole County: 5/8 mile west of Georgia Highway No. 39, 3/4 mile south of Georgia Highway No. 91. (More fine material in the 10- to 51-inch layer than in the modal.)	Medium-textured marine sediment of sandy clay loam and sandy loam.	125–2–1	0–6	115	9	.8	4.7	5.5
		125–2–3	10–51	113	13	5.5	4.7	10.2
		125–2–5	55–71	106	16	5.8	4.2	10.0
Seminole County: 3/8 mile east of Georgia Highway No. 39, 1 1/2 miles south of Georgia Highway No. 285. (Less fine material in the 56- to 72-inch layer than in the modal.)	Medium-textured marine sediment of sandy clay loam and sandy loam.	125–3–1	0–8	116	10	.5	.8	1.3
		125–3–3	19–56	122	10	3.0	2.4	5.4
		125–3–4	56–72	123	10	1.3	1.8	3.1
Troup sand:								
Seminole County: 3 3/4 miles east of Georgia Highway No.	Marine sediment; 40 to 72 inches	125–4–1	0–5	112	12	.6	1.9	2.5
		125–4–2	5–54	114	10	1.2	3.1	4.3
		125–4–4	58–68	122	10	1.0	.6	1.6

test data

procedures of the American Association of State Highway Officials (AASHO)]

Mechanical analysis[3]											Classification	
Percentage passing sieve—						Percentage smaller than—				Liquid limit	Plasticity index	AASHO[4]	Unified[5]
¾ inch	⅜ inch	No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 200 (0.074 mm)	0.05 mm	0.02 mm	0.005 mm	0.002 mm				
										Percent			
			100	84	42	37	31	16	9		[6]NP	A-4(0)	SM
			100	93	66	62	57	49	44	32	17	A-6(9)	CL
			100	94	71	69	66	62	60	39	17	A-6(11)	CL
			100	91	54	51	42	23	17		NP	A-4(0)	ML
			100	94	70	68	64	56	54	40	20	A-7-6(13)	CL
			100	97	73	72	69	60	55	42	24	A-7-6(16)	CL
		100	99	85	22	19	14	8	6		NP	A-2-4(0)	SM
		100	99	81	38	36	34	29	26	29	13	A-6(2)	SC
			100	88	44	41	38	32	31	30	10	A-4(1)	SC
			100	84	21	16	13	8	5		NP	A-2-4(0)	SM
		100	98	91	46	42	40	36	34	30	16	A-6(4)	SC
100	98	94	91	82	45	43	42	38	36	36	13	A-6(3)	SC
			100	82	16	12	10	7	5		NP	A-2-4(0)	SM
		100	98	86	32	28	27	22	20		NP	A-2-4(0)	SM
		100	99	86	27	24	22	19	17		NP	A-2-4(0)	SM
		100	99	78	18	14	10	6	5		NP	A-2-4(0)	SM
		100	99	77	15	12	10	6	5		NP	A-2-4(0)	SM
		100	96	73	27	25	22	18	16		NP	A-2-4(0)	SM
			100	72	16	14	11	7	4		NP	A-2-4(0)	SM
			100	75	14	11	10	6	5		NP	A-2-4(0)	SM
		100	99	79	37	37	35	34	32	36	12	A-6(1)	SM
			100	81	23	19	12	8	6		NP	A-2-4(0)	SM
			100	80	22	17	14	11	8		NP	A-2-4(0)	SM
			100	82	33	28	27	23	22	25	8	A-2-4(0)	SC
			100	78	19	14	10	6	5		NP	A-2-4(0)	SM
			100	80	24	18	14	8	6		NP	A-2-4(0)	SM
		100	98	77	33	28	25	22	20	23	7	A-2-4(0)	SC-SM

millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analyses used in this table are not suitable for use in naming textural classes for soil.

[4] Based on AASHO Designation M 145-49 (*2*).

[5] Based on MIL-STD-619B (*8*).

[6] NP = Nonplastic.

TABLE 6.—*Estimated soil properties*

[An asterisk in the first column indicates that the mapping unit in this series is made up of two or more kinds of soil. The soils in such a mapping series that appear in the first column of this table. These soils

Soil series and map symbols	Depth to seasonal high water table	Depth from surface	Dominant USDA texture	Classification	
				Unified	AASHO
Angie: Av	15 to 30 inches for 1 to 6 months each year.	0–7 7–65	Fine sandy loam Silty clay and silty clay loam.	SM CL or CH	A-2 A-6, A-7
Congaree Mapped only with Riverview soils.	30 to 60 inches for 1 to 2 months each year.	0–38 38–52 52–64	Loam Very fine sandy loam Fine sandy loam	ML or SM SM SM	A-2, A-4 A-2, A-4 A-2, A-4
Esto: EuB, EuE	60 to 120 inches; perched water table during wet periods.	0–8 8–12 12–65	Loamy sand and sandy loam. Sandy clay loam Sandy clay	SM SC SC or CL	A-2 A-6 A-6, A-7
Goldsboro: GmA	24 to 60 inches for 1 to 4 months each year.	0–14 14–65	Sandy loam Sandy clay loam	SM SC or SM	A-2 A-4, A-6
Grady: Grd	0 to 15 inches for 4 to 8 months each year.	0–5 5–11 11–62	Sandy loam Sandy clay loam Clay	SM or ML CL CL	A-4 A-6 A-6, A-7
Irvington: Ig	22 to 30 inches for 1 to 2 months each year.	0–7 7–29 29–44 44–62	Sandy loam Sandy clay loam Sandy clay loam Sandy clay loam	SM SC SC SC	A-2 A-4, A-6 A-2, A-6 A-2, A-6
Lucy: LMB	More than 120 inches	0–31 31–36 36–65	Loamy sand Sandy loam Sandy clay loam	SM SM SC or SM	A-2 A-2 A-2, A-6
Meggett: Myt	0 to 15 inches for 6 months each year.	0–7 7–46 46–62	Loam Clay Sandy clay	ML CH CH or CL	A-4 A-7 A-7, A-6
Norfolk: NhA, NhB	More than 120 inches	0–7 7–12 12–62	Loamy sand Sandy loam Sandy clay loam	SM SC or SM SC or SM	A-2 A-2 A-2, A-4, A-6
Ocilla: Oh	15 to 30 inches for 6 months each year.	0–34 34–48 48–65	Loamy sand Sandy loam Sandy clay loam	SM SM SC	A-2 A-2 A-2, A-6
Orangeburg: OeA, OeB, OeC2	More than 120 inches	0–5 5–9 9–63	Loamy sand Sandy loam Sandy clay loam	SM SM SC	A-2 A-2 A-6
Pelham: Pa	0 to 15 inches for 1 to 2 months each year.	0–34 34–61	Sand Sandy clay loam	SM SC	A-2 A-2, A-6
* Riverview: Riv For Congaree part of Riv, see Congaree series.	30 to 60 inches for 1 to 2 months each year.	0–6 6–46 46–62	Loam Silty clay loam Sandy clay loam	ML CL SC	A-4 A-6, A-4 A-6
Tifton: TuA, TuB	More than 120 inches	0–7 7–52 52–62	Sandy loam Sandy clay loam Sandy clay loam	SM SC SC	A-2 A-2, A-6 A-6, A-7
Troup: TzB, TzC	More than 120 inches	0–57 57–65 65–78	Sand Sandy loam Sandy clay loam	SM SM SM	A-2 A-2 A-2, A-6
Wagram: WeB	More than 120 inches	0–23 23–32 32–62	Loamy sand Sandy loam Sandy clay loam	SM SM SC, SM	A-2 A-2 A-2, A-6

[1] Iron concretions are retained in the sieve.

significant to engineering

unit may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for referring to the other

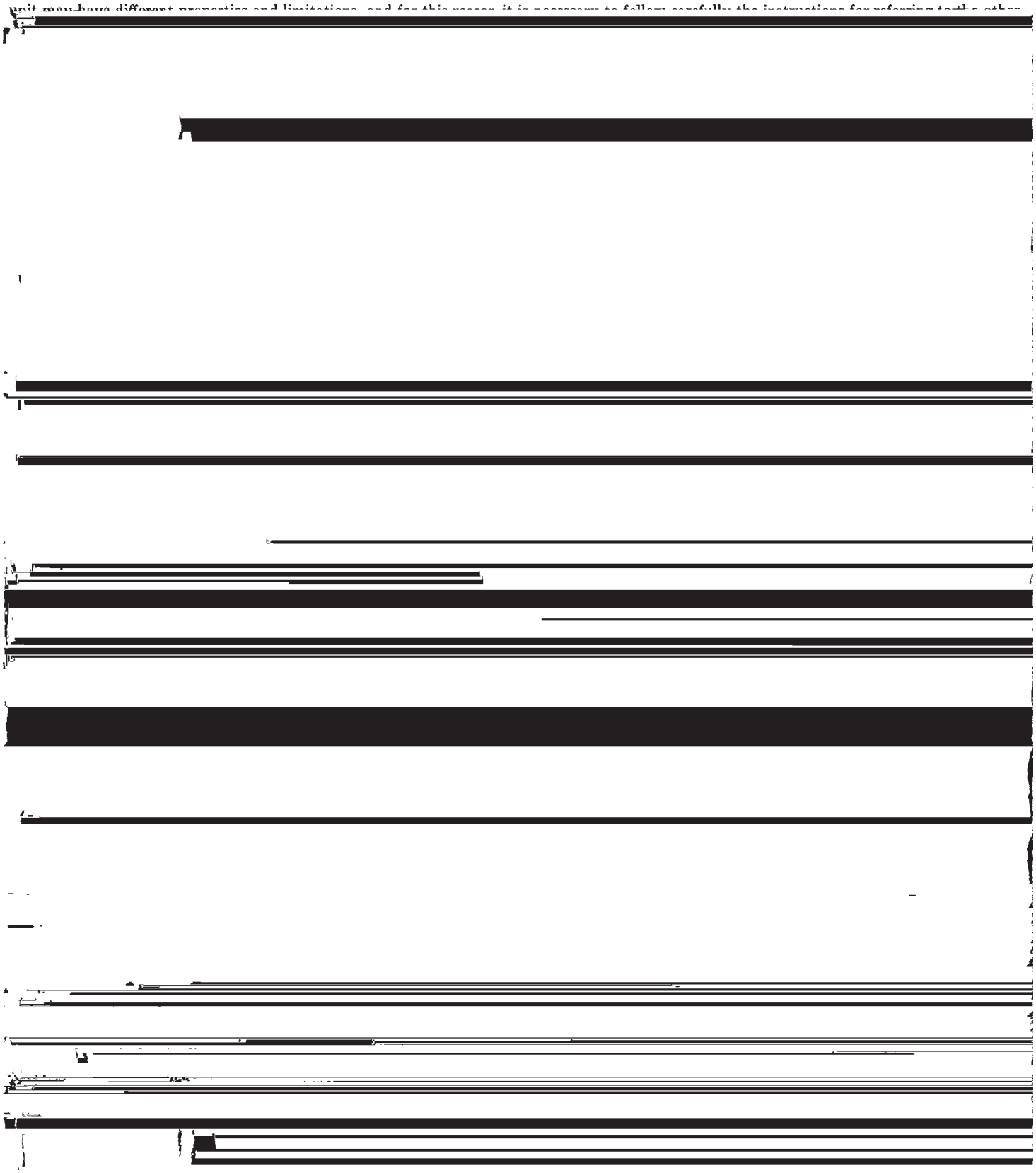


TABLE 7.—*Interpretations of*

engineering properties of the soils

unit may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for referring to the the first column of this table]

Suitability as source of—		Soil features affecting—				
Topsoil	Road fill	Pond reservoir areas	Embankments, dikes, and levees	Drainage for crops and pasture	Irrigation	Terraces and diversions
Poor to fair: silty clay loam at a depth of 7 inches.	Fair: high content of clay in subsoil.	Variable substratum.	Fair stability; medium to high compressibility.	Slow permeability	Slow intake rate; seasonal high water table.	Nearly level.
Good	Fair: fair traffic-supporting capacity.	Moderate permeability; variable substratum.	Medium compressibility; poor resistance to piping.	Flooding; otherwise, drainage not needed.	Features generally favorable.	Nearly level.
Fair: sandy clay at a depth of 12 inches.	Fair: high content of clay in subsoil.	Variable substratum.	Fair to good compaction characteristics.	Well drained	Slow intake rate	Slow permeability in lower part of profile.
Fair to poor: slope.	Fair: high content of clay in subsoil.	Variable substratum.	Fair to good compaction characteristics.	Well drained	Slope	Short, steep slopes.
Fair: 14 inches of suitable material.	Fair to good: seasonal high water table.	Moderate permeability.	Features generally favorable.	Moderate permeability; scarcity of outlets.	Features generally favorable.	Nearly level.
Poor: wetness	Poor: wetness	Variable substratum.	Moderate shrink-swell potential.	Slow permeability; scarcity of outlets.	Slow intake rate; seasonal high water table.	Nearly level.
Fair if surface layer and subsoil are mixed.	Fair: fair traffic-supporting capacity.	Features generally favorable.	Features generally favorable.	Seasonal high water table; scarcity of outlets.	Features generally favorable.	Nearly level.
Poor: sandy to a depth of about 31 inches	Good	Moderate permeability.	Moderate permeability when compacted	Well drained	Low available water capacity.	Features generally favorable

TABLE 7.—*Interpretations of engineer*

Soil series and map symbols	Degree and kind of limitation for—						
	Septic tank absorption fields	Sewage lagoons	Shallow excavations	Dwellings without basements	Sanitary landfill (trench type):	Local roads and streets	Light industries
Orangeburg: OeA, OeB, OeC2.	Slight	Moderate: moderate permeability.	Slight	Slight	Slight	Slight	Slight for OeA and OeB. Moderate for OeC2: slope.
Pelham: Pa	Severe: seasonal high water table; flooding.	Severe: flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.
* Riverview: Riv. For Congaree part of Riv, see Congaree series.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Moderate: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.
Tifton: TuA, TuB.	Moderate: permeability in lower part of subsoil is at the lower end of moderate.	Moderate: moderate permeability.	Slight	Slight	Slight	Slight	Slight
Troup: TzB, TzC.	Slight	Severe: moderate to moderately rapid permeability.	Severe: sandy to a depth of about 57 inches.	Slight	Moderate: moderate to moderately rapid permeability.	Slight	Slight for TzB. Moderate for TzC: slope.
Wagram: WeB	Slight	Severe: moderately rapid permeability.	Slight	Slight	Moderate: moderately rapid permeability.	Slight	Slight

[1] Onsite deep studies of the underlying strata, water tables, and hazards of aquifer pollution and drainage into ground water need to be made

ability, organic matter, and slope. If the floor needs to be affect excavation are wetness, slope, depth to bedrock, and

ing properties of the soils—Continued

Suitability as source of—		Soil features affecting—				
Topsoil	Road fill	Pond reservoir areas	Embankments, dikes, and levees	Drainage for crops and pasture	Irrigation	Terraces and diversions
Fair where mixed with upper part of subsoil.	Good	Moderate permeability.	Features generally favorable.	Well drained	Features generally favorable; slope.	Features generally favorable.
Poor: wetness	Poor: wetness	Variable substratum.	Fair stability; moderate permeability when compacted.	Seasonal high water table; flooding.	Wetness: low available water capacity.	Nearly level.
Good	Fair: fair traffic-supporting capacity.	Moderate permeability; variable substratum.	Medium compressibility.	Flooding	Features generally favorable.	Nearly level.
Fair where surface layer is mixed with subsoil.	Good	Moderate permeability.	Features generally favorable.	Well drained	Features generally favorable.	Features generally favorable.
Poor: sandy to a depth of about 57 inches.	Good	Moderate to moderately rapid permeability.	Moderate permeability when compacted.	Well drained	Low available water capacity.	Features generally favorable.
Poor: sandy to a depth of about 23 inches.	Good	Moderately rapid permeability.	Moderate permeability when compacted.	Well drained	Low available water capacity.	Features generally favorable.

for landfills deeper than 5 or 6 feet.

from soil at hand, and most cuts and fills are less than 6 feet deep.

Soil properties that most affect design and construction of roads and streets are load-supporting capacity and stability of the subgrade, and the workability and quantity of cut and fill material available. The AASHO and Unified classifications of the soil material, and also the shrink-swell potential, indicate traffic-supporting capacity. Wetness and flooding affect stability of the material. Slope, depth to hard rock, content of stones and rocks, and wetness affect ease of excavation and amount of cut and fill needed to reach an even grade.

Ratings for light industry are for the undisturbed soils that are used to support building foundations. Emphasis is on foundations, ease of excavation for underground utilities, and corrosion potential of uncoated steel pipe. The undisturbed soil is rated for spread footing foundations for buildings less than three stories high or foundation loads not in excess of that weight. Properties affecting load-supporting capacity and settlement under load are wetness, flooding, texture, plasticity, density, and shrink-swell behavior. Properties affecting excavation are wetness, flooding, slope, and depth to bedrock. Properties affecting corrosion of buried uncoated steel pipe are wetness, texture, total acidity, and electrical resistivity.

Topsoil is used for topdressing an area where vegetation is to be established and maintained. Suitability is affected mainly by ease of working and spreading the soil material, as in preparing a seedbed; natural fertility of the material, or response of plants when fertilizer is applied; and absence of substances toxic to plants. Texture of the soil material and its content of stone fragments are characteristics that affect suitability, but also considered in the ratings is damage that will result at the area from which topsoil is taken.

Road fill is soil material used in embankments for roads. The suitability ratings reflect (1) the predicted performance of soil after it has been placed in an embankment that has been properly compacted and provided with adequate drainage and (2) the relative ease of excavating the material at borrow areas.

Pond reservoir areas hold water behind a dam or embankment. Soils suitable for pond reservoir areas have low seepage, which is related to their permeability and depth to fractured or permeable bedrock or other permeable material.

Embankments, dikes, and levees require soil material resistant to seepage and piping and of favorable stability,

TABLE 8.—*Degree and kinds of limitations of soils for recreational development*

Soil series and map symbols	Camp areas	Playgrounds	Picnic areas	Paths and trails
Angie: Av	Moderate: seasonal high water table; slow permeability.	Moderate: seasonal high water table; slow permeability.	Moderate: seasonal high water table.	Slight.
Congaree Mapped only with Riverview soils.	Moderate: flooding	Moderate: flooding	Moderate: flooding	Moderate: flooding.
Esto:				
EuB	Moderate: slow permeability.	Moderate: slow permeability; slope.	Slight	Slight.
EuE	Moderate: slow permeability; slope.	Severe: slope	Moderate: slope	Slight.
Goldsboro: GmA	Slight	Slight	Slight	Slight.

layers that restrict movement of water; amount of water held available to plants; and need for drainage, or depth to water table or bedrock.

Terraces and diversions are embankments, or ridges, con-

Formation and Classification of the Soils

This section describes the major factors of soil formation

Seminole Counties have three geologic formations at or near the surface. These formations are Ocala Limestone, which is of Eocene age and occurs in all of Miller County and the northern part of Seminole County; Flint River Formation, which is of Oligocene age and occurs in the southern part of [illegible] and undifferentiated terrace

than softwoods. The organic-matter content in most of the soils is low to medium.

The growing plants provide a cover that helps to reduce erosion and stabilize the surface so that the soil-forming processes can continue. Leaves, twigs, roots, and entire plants accumulate on the surface of forest soils and then de-

mode of origin, are grouped. In table 9, the soil series of Miller and Seminole Counties are placed in some categories of the current system. Classes of the current system are briefly defined in the following paragraphs.

Order.—Ten soil orders are recognized. The properties used to differentiate among soil orders are those that tend to give broad climatic groupings of soils. The three exceptions to this, the Entisols, Inceptisols, and Histosols, occur in many different climates. Each order is named with a word of three or four syllables ending in *sol.*

Suborder.—Each order is subdivided into suborders that are based primarily on those soil characteristics that seem to produce classes with the greatest genetic similarity. The suborders narrow the broad climatic range permitted in the orders. The soil properties used to separate suborders are mainly those that reflect either the presence or absence of waterlogging, or soil differences resulting from the climate or vegetation. The names of suborders have two syllables. The

Seminole County in 1870 from part of Decatur County. These counties have been predominantly agricultural since their settlement began.

During the last 30 years, there has been a drastic decrease in the number of farms but a considerable increase in the size of farms. Farming methods have improved to the extent that yields per acre are higher, and, consequently, overall production of many of the common crops is greater even though the acreage is smaller. Among improved farming methods are rotation of crops, selection of better crop varieties, more effective use of crop residue, and more liberal use of fertilizer. Also, greater effort has been made to control plant diseases and insects, use of irrigation has increased each year, and some of the less productive soils, once used for row crops, are now used for improved pasture or for pines. At present, major farm income is derived from peanuts, corn, watermelons, truck crops, small grain, poultry and poultry products, livestock, and forest products.

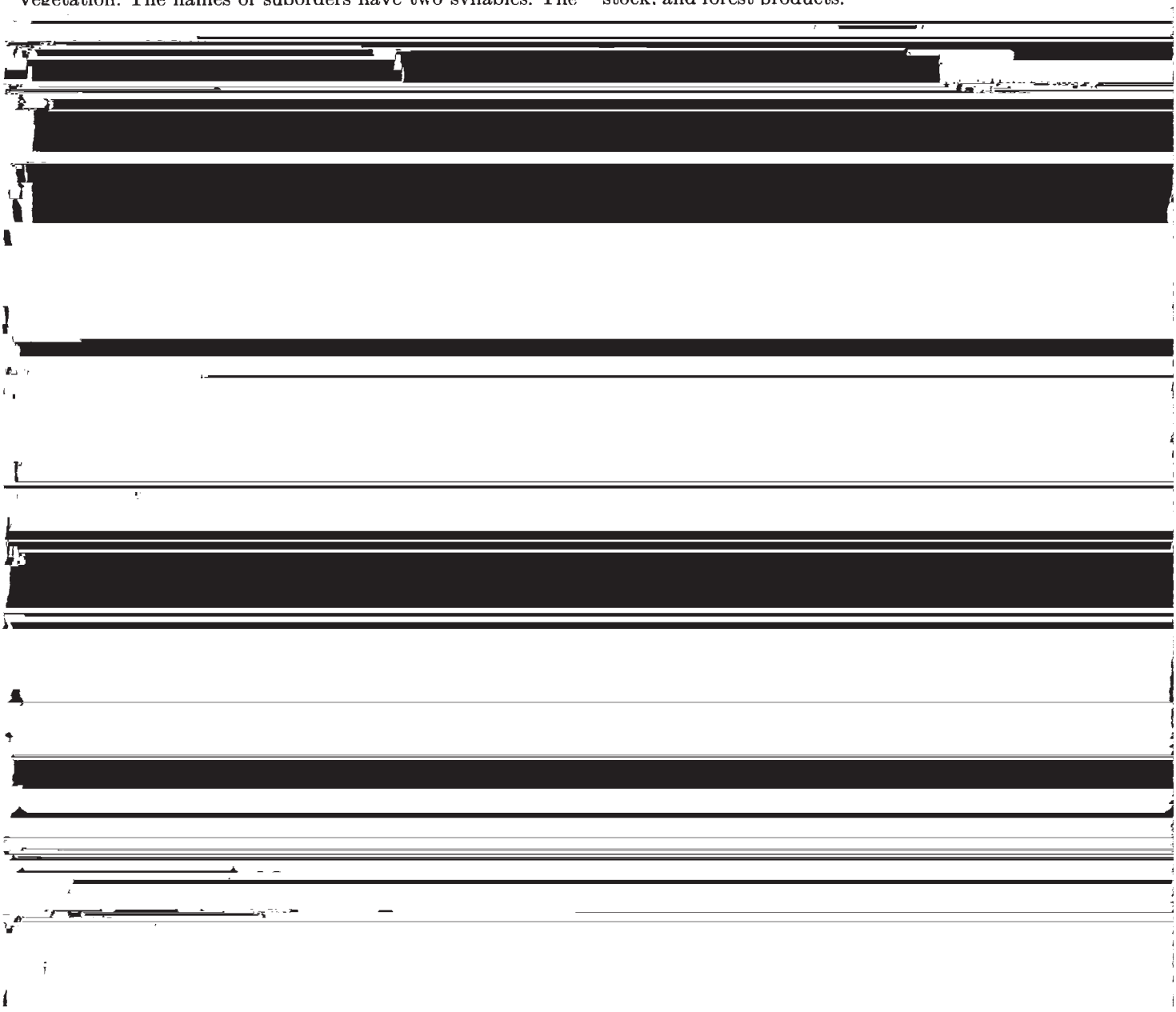


TABLE 10.—*Temperature and precipitation data*

Month	Temperature				Precipitation		
	Average daily maximum	Average daily minimum	Two years in 10 will have at least 4 days with—		Average total	One year in 10 will have—	
			Maximum temperature equal to or higher than—	Minimum temperature equal to or lower than—		Less than—	More than—
	°F	°F	°F	°F	*Inches*	*Inches*	*Inches*
January	63.0	39.6	77	24	4.15	1.2	7.4
February	65.8	41.8	80	25	4.30	1.3	7.4
March	71.8	47.1	84	32	5.82	2.2	9.2
April	80.3	54.7	88	40	4.74	1.5	8.8
May	87.2	61.6	95	50	3.91	1.3	7.6
June	91.3	68.3	98	60	4.46	1.8	7.0
July	91.6	70.5	98	67	6.80	4.6	10.2
August	91.9	70.0	98	65	4.91	2.5	7.7
September	88.2	66.3	96	58	4.58	1.4	7.8
October	80.8	55.5	89	40	2.30	.2	4.8
November	70.7	44.9	82	29	2.68	.6	6.2
December	64.0	39.8	78	25	4.55	1.8	8.6
Year	78.9	55.0	[1]100	[1]20	53.20	38.5	68.5

[1] The extreme in temperature that will be equaled or exceeded on at least 4 days in 2 years out of 10.

only permanent streams in the two counties. In recent years many small ponds have been built, but wells are the chief source of water.

Lake Seminole, the southern boundary and part of the western boundary of Seminole County, has a surface area of 37,500 acres. It has become a tremendous sporting attraction for fishing, boating, water sports, bathing, and camping.

Climate[6]

Miller and Seminole Counties, which are in extreme southwest Georgia, have a humid, subtropical climate. Summers are long and rather hot, and winters are usually short and mild. The normally generous rainfall has a marked summer maximum and a secondary maximum early in spring. Fall is the driest season and brings some of the area's most pleasant weather. Long periods with warm, sunny days and mild to

60's by early morning. Average maximum temperatures in autumn range from the 80's in September to the low 70's in November and the minimum temperatures from the 60's to the 40's.

The first freezing temperature usually comes around mid-November, and periods of cold weather occur at fairly regular intervals from then until mid-March. The cold spells are usually short and alternate with longer periods of mild weather throughout the winter. Freezing occurs on about 30 days in an average winter, but it is unusual for more than three or four successive days to have a minimum temperature under 32°. Only about 2 winters in 10 have as many as 4 days with a low under 20°. The average date of the last

TABLE 11.—*Probabilities of low temperatures in spring and fall*

spring freeze is around mid-March, and mean temperatures increase by 15° from March to May.

Rainfall is at a maximum in midsummer when demands are greatest. Just over 30 percent of the annual total falls during June, July, and August. July, the wettest month, normally has almost 7 inches. Most summer rains occur as showers and thundershowers, and amounts generally show large variations from place to place. On the average, 8 days in June and August and 11 in July get 0.10 of an inch or more of rain. Most summer months have 1 or 2 days with an inch or more of rain. A thunderstorm occurs on about 1 out of 3 days in summer. Rainfall decreases in both frequency and amount

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrations of compounds, or of soil grains cemented together. The composition of some concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are examples of material commonly found in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by [illegible]

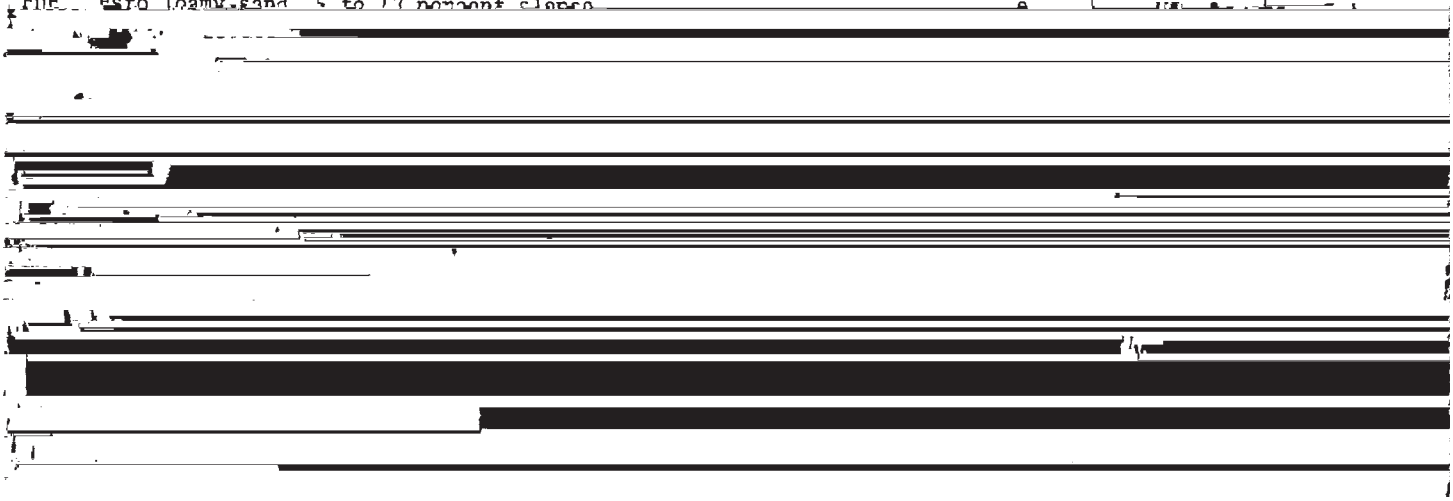
inch) in diameter along the greatest dimension; *medium*, ranging from 5 millimeters to 15 millimeters (about 0.2 to 0.6 inch) in

the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). Soil of the silt textural class is 80

GUIDE TO MAPPING UNITS

For a full description of a mapping unit and for general information about its management, read both the description of the mapping unit and that of the soil series to which the mapping unit belongs. Other information is given in tables as follows:

Map symbol	Mapping unit	Described on page	Capability unit	Woodland suitability group
Av	Angie fine sandy loam	7	IIw-3	2w8
EuB	Esto loamy sand, 2 to 5 percent slopes	8	IIIe-3	3o1
EuE	Esto loamy sand, 5 to 17 percent slopes	9		



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